

EXAMINING HEALTHCARE UTILIZATION PATTERNS, SCHOOL
ATTENDANCE, BEHAVIOR, AND ACADEMIC PERFORMANCE AMONG
SCHOOL-AGED CHILDREN IDENTIFIED AS HOMELESS

by

Ellissa Dean Brooks Nelson

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Approved by:

Dr. Yvette Huet

Dr. Lori Thomas

Dr. Christopher Blanchette

Dr. A. Suzanne Boyd

Dr. Richard Lambert

Dr. Melanie Spencer

ABSTRACT

ELLISSA DEAN BROOKS NELSON. Examining healthcare utilization patterns, school attendance, behavior, and academic performance among school-aged children identified as homeless (Under the direction of DR. LORI THOMAS and DR. YVETTE HUET)

There is little research on healthcare utilization patterns, attendance, academic performance, and behavior among school-aged children experiencing homelessness examined by homelessness type. The McKinney-Vento Homelessness Assistance Act (Pub. L. 100-77, July 22, 1987, 101 Stat. 482, 42 USC 11431 et seq.) as amended by S.896 The Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2009 (U.S. Department of Housing and Urban Development, 2011) defines homelessness among school-aged children using four categories: (1) literally homeless, (2) living in a shelter, (3) living with friends or family (i.e., “doubled up”), or (4) living in a motel (U.S. Department of Education, 2004). Considering that homeless children in families comprise the fastest-growing group of homeless persons in the United States (AHAR, 2013, part 2), this research set out to examine housing type as the basis of a typology of student homelessness. The effect of housing type on student’s health, academic, attendance, and behavioral outcomes was examined to better understand this subpopulation of individuals living as homeless.

Results indicated that children living as literally homeless experienced significantly worse outcomes in behavior when compared to the other housing type categories and children living as literally homeless and children living in a motel experienced worse outcomes in attendance when compared to the other housing type categories. Children living as literally homeless also experienced significantly more

healthcare encounters overall and by type when compared to students experiencing other types of homelessness. When academic, attendance, and behavior outcomes were examined by housing type distinguishing between students that experienced higher healthcare encounters and students with lower healthcare encounters, results indicated that students living as literally homeless and living in a motel experienced worse outcomes than students living in a shelter and students living doubled up with family or friends.

These results revealed that a small percentage of the student homeless population may require more intensive services and better alignment of resources to address their needs.

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CHAPTER 1: INTRODUCTION

Little research has examined healthcare utilization patterns, academic performance, attendance and behavior among students experiencing homelessness, particularly by type of housing crisis. The McKinney-Vento Homelessness Assistance Act (Pub. L. 100-77, July 22, 1987, 101 Stat. 482, 42 USC 11431 et seq.) as amended by S.896 The Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2009 (U.S. Department of Housing and Urban Development, 2011) defines homelessness among students using four categories: (1) literally homeless, (2) living in a shelter, (3) living with friends or family (i.e., “doubled up”), or (4) living in a motel (U.S. Department of Education, 2004). Often “McKinney-Vento” students are considered one population, without recognition in policy and practice of differences within the group.

For the 2013-2014 school year, over 4,000 students enrolled in Charlotte-Mecklenburg Schools (CMS) were designated as McKinney-Vento Status (MCV). However, data are not publicly available that distinguish these students by their homelessness type, which would be useful for determining whether their actual needs are in alignment with services being received. While there are indicators for these students regarding the type of homelessness experienced, these data have not been used beyond state and federal reporting purposes. This homelessness type indicator allows for the natural creation of distinct subgroups of students experiencing homelessness. Examining diverse needs within and between these distinct groups of homeless students can promote

better allocation of resources and program development based on better alignment with actual needs, leading to improved student outcomes and potentially to reduced costs for society.

The U.S. Department of Housing and Urban Development (HUD) defines a homeless person as “an individual who lacks a fixed, regular, and adequate nighttime residence” who resides in “supervised publicly or privately operated shelter designed to provide temporary living accommodations” or “a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings” (U.S. Department of Housing and Urban Development, 2011). The Department of Education’s definition per the 1987 McKinney-Vento Homelessness Assistance Act provides a broader definition including HUD’s definition plus “children and youth who are sharing the housing of other persons due to loss of housing, economic hardship, or a similar reason...abandoned in hospitals; or awaiting foster care placement” (U.S. Department of Education, 2004). The primary distinction between these two definitions is those who have no home but live with friends or other family members, referred to as “doubling up,” and those that live in motels – these individuals are homeless according to the U.S. Department of Education for education purposes, but not by HUD for eligibility for emergency shelter or transitional or permanent housing programs (National Alliance to End Homelessness, 2012). A consequence of these differing definitions presents challenges in counting homeless persons and has important implications for services that are planned based on local and national enumeration. Estimates of how many people are actually homeless differ both for governmental and advocacy agencies. Regardless, most agree that families with children are the fastest growing segment of the homeless

population (Culhane, Metraux, Park, Schretzman, & Valente, 2007; National Alliance to End Homelessness, 2012; National Center for Homeless Education, 2012; Tobin & Murphy, 2013).

Homelessness among students has broad implications for individuals, communities, and society. Homeless students face attendance, behavior, performance, and health challenges (e.g., chronic absenteeism, aggression, low reading scores, and malnutrition) and these challenges have been linked to, but not limited to, reduced future earnings, higher incarceration rates, increased high school dropout rates, and chronic illnesses. Research to date has focused primarily on the homeless family unit and the head of household – this research focuses on the homeless student. This project provides the opportunity to dig deeper into the characteristics of the homeless student and to better understand their academic, attendance, behavior, and health challenges and provides a framework for future research studies to further explore the unique characteristics and challenges of homeless students.

The project used an underutilized homelessness typology created by the education provisions in the McKinney-Vento Homeless Act to better understand homeless students. The project proposed and answered the following question: *Does the McKinney-Vento Housing Type Indicator provide an effective typology to understand differences in academic performance, school attendance, problem behavior, and healthcare utilization among homeless students?* The research answered these questions through the following specific research aims:

1. Compare mean differences in academic performance among MCV students' housing type.

2. Compare mean differences in attendance among MCV students' housing type.
3. Compare mean differences in behavior among MCV students' housing type.
4. Compare mean differences in healthcare utilization patterns among MCV students' housing type.

This dissertation is presented in the following manner: Chapter 2 presents an overview of the McKinney-Vento Homeless Education Assistance Act and provides a review of the literature to better understand homeless families' characteristics and how homelessness impacts children's health, mental health, and education; their utilization of healthcare services; and costs associated with those services. Chapter 2 also describes varying typologies of homelessness. Chapter 3 describes the research methodology used to address the research questions. Next, in Chapter 4, the results of the research are presented and discussed. Finally, the implications of the findings are discussed in Chapter 5.

CHAPTER 2: REVIEW OF THE LITERATURE

During the 2013-14 school year, over 1.3 million students that were enrolled in public school across the United States were homeless. The number of homeless students enrolled in public schools has nearly doubled since 2006-07. However, the total number of homeless children is likely under-reported because the U.S. Department of Education does not require reporting of children too young to be in school or older children who are not enrolled in school, who have dropped out, or are otherwise not identified by school officials. However, the McKinney-Vento Homeless Assistance Act, a federal law that includes the requirement that schools report the total number of students in each school district that are experiencing homelessness each school year, provides the opportunity for researchers, policy makers, and stakeholders to better understand the complexity of the challenges faced by homeless students living in the United States (U.S. Department of Education, 2016).

The McKinney-Vento Homeless Assistance Act

The McKinney-Vento Homeless Assistance Act (McKinney-Vento Act) is a federal law that includes a section for guidance for education purposes. A portion of the McKinney-Vento Act, Section 721, ensures immediate enrollment and educational stability for homeless children and youth. The Act, reauthorized in January 2002 as Title X, Part C, of the No Child Left Behind Act, is the primary piece of federal legislation dealing with the education of children and youth in homeless situations. The McKinney-

Vento Act provides federal funding to states for the purpose of supporting district programs that serve homeless students. As previously noted, the education component of the McKinney-Vento Act defines homeless students as “individuals who lack a fixed, regular, and adequate nighttime residence.” Specifically, the Act provides examples of children who would fall under this definition:

- Children and youth sharing housing due to loss of housing, economic hardship or a similar reason;
- Children and youth living in emergency or transitional shelters;
- Children and youth abandoned in hospitals;
- Children and youth awaiting foster care placement;
- Children and youth whose primary nighttime residence is not ordinarily used as a regular sleeping accommodation (e.g., park benches, etc.);
- Children and youth living in cars, parks, public spaces, abandoned buildings, substandard housing, bus or train stations;
- Migratory children and youth living in any of the above situations (U.S. Department of Education, 2004).

The McKinney-Vento Act draws a distinction between children and youth who are *in* foster care, and those who are *awaiting* foster care. Specifically, children and youth who have already been placed in foster care are not considered homeless; children and youth who are awaiting foster care placement are considered homeless (North Carolina Department of Public Instruction [NCDPI], n.d.; U.S. Department of Education, 2004).

Under the McKinney-Vento Act, State educational agencies (SEAs) and local educational agencies (LEAs) are required to review and undertake steps to revise laws, regulations, practices, or policies that may act as barriers to the identification, enrollment,

attendance, or success in school of students experiencing homelessness (U.S. Department of Education, 2016). The key provisions of the McKinney-Vento Act, developed explicitly to highlight and respond to the needs of homeless students, are further described below.

Funding

The McKinney-Vento Act provides grant funding to states and, in return, states are bound by the terms of the Act, which are detailed below. States receive funding each year from the U.S. Department of Education to support the education of homeless students in school programs. For many states, this is the only money specifically designated for serving the educational needs of homeless students (U.S. Department of Education, 2004).

School District Responsibilities

Local school districts must designate a homeless liaison to ensure that homeless children and youth are identified and served. Liaisons are expected to collaborate and coordinate with other service providers in the community, including public and private child welfare and social services agencies; law enforcement agencies; juvenile and family courts; mental health agencies; domestic violence agencies; child care providers; runaway and homeless youth centers; and providers of emergency, transitional, and permanent housing. The liaison must provide public notice to homeless families (in the community and at school), and facilitate access to school services including transportation to and from school until the end of the school year, even if a student becomes permanently housed (NCDPI, n.d.; U.S. Department of Education, 2004). Though not a requirement of the McKinney-Vento Act, in Charlotte-Mecklenburg Schools (CMS), McKinney-Vento

social workers are designated to schools with high proportions of students experiencing homelessness. McKinney-Vento social workers help to eliminate barriers to academic success by providing counseling support, school-based and community resources and assistance with referrals to meet basic needs of students experiencing homelessness to help minimize the harmful effects of homelessness. CMS' McKinney-Vento social workers also ensure that services provided to students meet federal compliance guidelines.

LEAs are required to enroll homeless students immediately, even if they lack normally required documents, such as immunization records or proof of residence, and even if they are not accompanied by an adult. In addition, students experiencing homelessness are eligible, based on individual need, for services provided to other students such as preschool, free or reduced lunch, services for English language learners, special education, vocational/technical education, gifted and talented services, and before- and after-school care. Moreover, students experiencing homelessness are automatically eligible for Title I services (e.g., after-school and summer programs, parental involvement activities, and social work services) and are to attend schools with students who are not experiencing homelessness rather than be placed in separate schools because they are homeless. School districts are also required to track their homeless students and report their data annually to the State (NCDPI, n.d.; U.S. Department of Education, 2004).

Background

Data from the 2015 Annual Assessment Report to Congress (AHAR) indicate a five percent decrease in the number of homeless family households between 2014 and

2015, nationwide. In addition, the 2015 AHAR report indicates that 36.5 percent of the homeless population comprises families with children while nearly one-quarter (23 percent) of all homeless people were children, under the age of 18. However, almost 60 percent of homeless people in families with children are under the age of 18. Slightly more than half (53%) of the unsheltered people in families with children are under the age of 18 (AHAR, 2015, Part 1).

Notably, shelter use among homeless families with children is increasing. In 2014, nearly 88.7 percent of all people who were homeless in families with children on a single night stayed in shelter programs and more than half of all states had at least 90 percent of their families with children in shelter. Since 2007, the number of sheltered people in families with children on a single night increased by 7.6 percent, while the number of unsheltered dropped by 57.4 percent. Additionally, since 2014, the number of homeless children under the age of 18 declined by 6 percent (AHAR, 2015, Part 1).

While on a national level statistics for homeless families with children have improved, local statistics for homeless families with children are not as promising. For 2015, estimates of family homelessness indicated there are 1 to 2.9 percent of homeless people in families in North Carolina. For Point-in-Time (PIT) estimates, North Carolina was identified as having one of the largest increases – 17.1 percent - in homeless people in families with children since 2007. North Carolina was also identified as having one of the largest decreases – 13.6% - in sheltered family homelessness. For North Carolina's bordering states, South Carolina and Tennessee were included among 5 states as having the highest increases in rates of unsheltered people in families with children between 2014 and 2015 (AHAR, 2015, Part 1).

The U.S. Department of Education collects data annually from local education agencies (LEAs) about children ages 3 through grade 12 who are enrolled in public schools. The Department of Education uses the four distinguishing primary nighttime residence categories (previously described) as mandated under Subtitle VII-B of the McKinney-Vento Act. Most recent statistics available from the U.S. Department of Education indicate that during the 2013-2014 academic year, over one million children were living in the primary nighttime residences categories, an 8 percent increase from the 2012-2013 school year. Among these children, 14.3 percent were in shelters, transitional housing, or awaiting foster care placement; more than three quarters (76.2 percent) were living doubled up with family or friends; 3.2 percent were in an unsheltered location; and 6.2 percent were living in a hotel or motel. Numbers of children in each of these nighttime residence categories have increased since the 2012-2013 school year (AHAR, 2014, Part 2).

Characteristics of Homeless Families with Children

The predominant form of family homelessness is a single adult with one or more children. Of sheltered families with children, the average homeless family is headed by a minority woman under the age of 18. Of all sheltered homeless children in families, 50.5 percent are under the age of six. However, it should be noted that the number of sheltered adult men in families with children increased 8.9% between 2013 and 2014. The number of sheltered homeless people in families with children in households of 5 or more people increased 13.5 percent from 2013 to 2014 (AHAR, 2014, Part 2).

The length of homelessness varies among households with children. Seventy-five percent of homeless families experience short-term homelessness (defined as between

three weeks and three months) and tend to remain housed afterwards. Twenty percent of homeless families have one homeless stay that lasts more than six months and 5 percent of families are determined “episodically” homeless defined as having repeated short stays in family shelters (Bassuk, 2010; Bassuk et al., 1996; Tobin & Murphy, 2013). Similarly, Culhane and colleagues (2007) reported 72 to 80 percent of homeless families experience a single episode of shelter use of relatively short duration; 18 to 21.5 percent of families experience fewer than 1.5 episodes of shelter use of relatively long duration; and 2 to 8 percent of families experience repeated shelter stays (3 to 3.5 on average) of relatively short duration (Culhane, et al., 2007). For the majority of families, homelessness is a brief, one-time occurrence.

Homeless families look very similar to other poor families (Burt, 2001). The most important differences between homeless families and other poor families concern not their personal characteristics, but the resources they need to secure housing. Specifically, homeless families have extremely low incomes (Bassuk et al., 1996), homeless families are less likely than low-income families who remain housed to have access to housing subsidies (Buckner, Bassuk, & Weinreb, 2001), and the social networks of homeless families are not able to provide sufficient help (Shinn, 2009).

Impact of Homelessness

Homelessness can be detrimental to families and children. Living in a shelter or on the street can be unsanitary, unsafe, and chaotic. These families are at increased risk of sustaining physical damage, including injuries and infections (Bassuk et al., 1996). Children often suffer extensive emotional harm as a result from living on the streets or in a shelter which impacts children’s sense of privacy, security, and trust (Dauber,

Neighbors, Dasaro, Riordan, & Morgenstern, 2012). The education of children growing up without homes makes attending school and meeting learning goals exceptionally difficult (Fantuzzo, LeBoeuf, Chen, Rouse, & Culhane, 2012).

Physical Health

Children who are experiencing homelessness are likely to suffer both chronic and acute health problems. The unsanitary shelter conditions, exposure to weather and extremes of temperature, and lack of regular medical care that often accompany homelessness leave them vulnerable to a host of illnesses (Bassuk et al., 1996). Compared to housed children, homeless children contract four times as many respiratory infections, twice as many ear infections (National Center on Family Homelessness, 2012; Ringwalt, Greene, Robertson, & McPheeters, 1998), are four times more likely to have asthma (National Center on Family Homelessness, 2012; Karabanow, 2004; Williams, 2003), are more likely to be hospitalized, to have delayed immunizations, to have elevated blood lead levels (Alperstein, Rappaport, & Flanigan, 1988; Better Homes Fund, 1999; Rafferty & Shinn, 1991; Weinreb & Buckner, 1993), and experience nearly twice as many stressors (Masten, Neemann, & Andenas, 1994). In addition, homeless children are twice as likely to go hungry as housed children (Weinreb et al., 2002). A strong correlation exists between inadequate nutrition and future problems with cognitive delays and academic achievement (Molnar, Rath, & Klein, 1990; Weinreb et al., 2002). These health problems substantially impact a student's ability to engage in the classroom – ultimately affecting their long-term academic outcomes.

Psychological and Emotional Impairments

In addition to physical health problems that affect homeless children, many also experience serious psychosocial and mental health problems. Numerous studies have repeatedly demonstrated that homeless children suffer much greater rates of psychological illness than their housed peers (Whitbeck & Hoyt, 1999). More specifically, girls are more likely to develop internalizing behaviors such as depression and anxiety while boys are more likely to struggle with externalizing behaviors such as aggression (Cauce et al., 2000). Children of both genders tend to suffer from high rates of depression, as do homeless women and men. However, mental health treatment can be very difficult for homeless families to access because they often lack health insurance coverage or are unable to engage healthcare providers in the community (National Center on Family Homelessness, 2009).

Developmental and Educational Deficits

Homelessness has significant effects on the cognitive development and educational achievement of children (Fantuzzo et al., 2012). Several studies have indicated that homelessness translates into significantly worse academic performance outcomes and increased number of absences from school when compared to their housed low-income peers (Menke & Wagner, 1997; Schteingart et al., 1995; Rubin et al., 1996). In a quasi-experimental study of 8,762 students who were born in Philadelphia and enrolled in third grade in the city's public school system, Fantuzzo and colleagues (2012) found that homelessness early in life related to significant delays in academic engagement and math proficiency while frequent homeless episodes through the primary school years related to truancy. Moreover, in a study conducted by Masten and

colleagues (2012), homeless preschool children were four times more likely than their housed low-income peers to experience developmental delays such as delays in language, reading, social development, and motor development.

While research is mixed on how homeless children compare to their housed low-income peers once they reach school age, researchers do agree that while all children living in poverty are at high risk for poor academic achievement, the risk is even greater among children who experience homelessness and high residential mobility (Fantuzzo et al., 2012; Masten et al., 1997). Students who live in shelters change schools more often than their housed peers and characteristically during the middle of the school year – when the greatest disruption to learning is likely. With each change in schools, it is estimated that the homeless child loses between four and six months of learning (Fantuzzo et al., 2012). Results from a recent study conducted by Voight and colleagues indicate that disruption in the child's grade causes a reading learning loss with effects lasting beyond the year of disruption (Voight, Shinn, & Nation, 2012).

Homeless children are more likely to be absent from school when compared with housed low-income students (National Center for Homeless Education, 2009). In a study conducted by Buckner and colleagues, low-income housed and homeless children's academic outcomes were found to be more accurately predicted by the number of days they had been absent from school than their housing status (Buckner, Bassuk, & Weinreb, 2001).

In addition to the loss of considerable academic time, homeless children are more likely than their housed peers to have trouble with classroom engagement and are diagnosed with learning disabilities at twice the rate of housed children (National Center

on Family Homelessness, 2009). Despite this overrepresentation in eligibility for special education, however, homeless students often do not receive the services for which they qualify (Duffield, Heybach, & Julianelle, 2009). This is the result from changing schools frequently, resulting in a disruption in the diagnosis process and school staff may be reluctant to initiate the referral process for homeless students – expecting them to move before it is complete (Tobin & Murphy, 2013).

Utilization of Services

Shelters

Only a small group of families use shelters repeatedly. These families also tend to appear more troubled, with heads of household receiving higher levels of inpatient treatment for mental health and substance use problems and higher levels of disability, as measured by receipt of supplemental security income (SSI) and more foster care placements (AHAR, 2010). Families in this small group of episodic shelter users generally benefit from more intensive services, such as supportive housing (National Alliance to End Homelessness, 2006). Culhane and colleagues (2007) found that episodic shelter users had the highest rates of intensive service utilization, disability, unemployment, and foster care involvement. While temporary shelter users had the next highest rates of identified need or service history, long-stay shelter users had the lowest rates and were not statistically different from temporary shelter users. The majority (72 to 74 percent) of homeless families experiences a single shelter episode, followed by about 1.5 episodes of longer periods (20 to 21.5 percent) and repeated short stays (5 to 8 percent) (Bassuk, 2010; Bassuk et al., 1996; Culhane et al., 2007; Tobin & Murphy, 2013).

Social Services

The provision of services is expensive and often difficult given the multiple and widely varying and multiple challenges confronting homeless families. Moreover, developing service plans can be difficult since not all families have the same service needs. For example, a middle class mother fleeing domestic violence might need short-term shelter and longer-term counseling, whereas some chronically poor and persistently homeless families may need long-term housing with more supports (National Alliance to End Homelessness, 2006). However, regardless of supportive services being offered to homeless families, housing must be addressed to expect positive outcomes.

The Family Options Study, launched by HUD in 2008 and still underway, is a rigorously designed experimental study which includes more than 2,200 homeless families in 12 communities being tracked for a minimum of 3 years. This study intends to compare the effectiveness and relative costs of four main interventions available to homeless families – permanent housing subsidy, project-based transitional housing, community-based rapid re-housing, or usual care. Preliminary results indicate that families who participate in the permanent housing subsidy intervention with no supportive services (SUB) option appear to do better than homeless families who participate in the community-based rapid re-housing with limited housing-focused services (CBRR) intervention, the project-based transitional housing with up to 24 months of intensive supportive services (PBTH) intervention, and the usual care (UC) intervention. Notably, homeless families who participated in SUB experienced less homelessness, fewer child separations, and fewer incidents of domestic violence and are more likely to be living on their own. In addition, children in SUB families experienced

less mobility between schools and families experienced less food insecurity and less economic stress (Gubits et al., 2015).

Prior to the Family Options Study, scholars noted that the best services for homeless families come in the form of compatible, comprehensive, adaptive, and responsive service plans that support housing stability (e.g., Davis & Lane, 2012; U.S. Department of Housing and Urban Development, 2009) and provide opportunities for dialogue to allow family members to identify and make plans to achieve their own goals (National Alliance to End Homelessness, 2006). The five main categories of services typically offered to homeless families include case management, addiction and mental health support, enhancement of social supports and empowerment, parenting support and family reunification, physical health (Tobin & Murphy, 2013; Wasserman & Clair, 2011), and housing services to promote housing stability (Gubits, et al., 2015).

Healthcare

In 2009, two-thirds of children eligible for Medicaid were not enrolled (National Center on Family Homelessness, 2009). However, the Children's Health Insurance Program Reauthorization Act (CHIPRA) reauthorized the Children's Health Insurance Program (CHIP) in April 2009 and, in 2010, the Affordable Care Act (ACA) contained provisions to strengthen the program. The ACA extended CHIP funding through September 2015 and requires states to maintain eligibility standards through 2019. As a result of this reauthorization of CHIP in 2009 and the provisions by the ACA in 2010, the rate of uninsured children dropped from 9.2 percent in 2008 to 7 percent in 2012 (Medicaid.gov, n.d.). Additionally, advocacy groups encourage participation by pushing the expansion of presumptive eligibility which would mean in certain low-income areas,

programs can enroll a child to start receiving Medicaid coverage immediately based on the family's reported income, and have a month to verify that income. As of 2016, fifteen states had presumptive eligibility for Medicaid and twelve for their State Children's Health Insurance Programs [CHIP] (from para. 3 of *Presumptive Eligibility for Medicaid and CHIP Coverage*) that covers children up to (and some above) 200% of poverty in most states (Kaiser Family Foundation, 2013). Moreover, expansion of the Medicaid reciprocity model, which allows recipients in one state to receive Medicaid in another state without re-establishing eligibility, would make health benefits more accessible to homeless families (American Academy of Pediatrics, 2005). Most importantly, enrolling families in Medicaid is more cost-effective to society than paying for emergency room visits (National Center on Family Homelessness, 2009).

Homeless children and families remain at a significantly high risk of having a host of unmet needs for healthcare. Among children, unmet need for care has special significance considering it can adversely affect health status and functioning not only in the short-term but long-term. For example, untreated physical, psychological, and behavioral problems put children at risk for developing lifelong chronic conditions such as heart disease, diabetes, and cancer (Tobin & Murphy, 2013). Simpson and colleagues (1997) estimated that as many as 1.3 million children were unable to get needed medical care, almost 4.2 million children were unable to obtain needed dental care, and more than 800,000 went without needed prescription medicine and/or glasses during 1993. While these statistics are dated, these data are useful in realizing the extent of children's unmet healthcare needs. However, existing studies lack information about the characteristics of children exhibiting these needs (Newacheck et al., 2000). Consequently, there remains a

need to better understand the characteristics of homeless children who are literally homeless, and those who fall into the broader DOE definition of homelessness so that solutions can be developed to identify such children and ensure that needed care is provided.

Costs of Homelessness

Physical and mental health challenges, delayed development, and disrupted education each carry costs that families experiencing homelessness may incur. In addition to personal costs, the societal costs of family homelessness are also significant. More taxpayer money is spent to place a family in an emergency shelter than in a permanent home (National Alliance to End Homelessness, 2012). Other costs to society include providing mental health and substance abuse treatment, physical health care, and police intervention. There are also “opportunity costs,” or the lost benefits to society, such as lower educational attainment, health, and income (National Center on Family Homelessness, 2012).

Housing

Emergency shelters provide temporary housing for people who have no other place to stay. For families with children, however, emergency shelters are often more expensive than permanent supportive housing (Abt Associates, et al., 2010). The annual cost of emergency shelter beds funded by the U.S. Department of Housing and Urban Development’s Emergency Shelter Grant Program cost approximately \$8,000 more than the average annual cost of a Section 8 Housing certificate (National Alliance to End Homelessness, 2012). Likewise, preliminary results from the Family Options Study indicates that the SUB option, which offers homeless families a permanent housing

subsidy, contributes to being one of the more cost effective of all the options being compared in the study (Gubits et al., 2015). Moreover, it costs taxpayers more money to place a family in emergency shelter than in permanent housing on a monthly basis. The overall cost to the nation for sheltering homeless families is estimated to be between \$1.9 and \$2.2 billion annually (National Alliance to End Homelessness, 2006). Additionally, the prevalence of childhood foster care among children experiencing homelessness is 34 times the childhood foster care prevalence rate among all U.S. children. The adjusted marginal cost associated with foster care is \$60,422 per child annually (Harburger & White, 2004).

Health and Mental Healthcare

Emergency departments are often the primary place where families experiencing homelessness go to receive healthcare since a significant proportion of these families do not have medical insurance or access to primary medical care; therefore, the emergency department serves as the only available source of care (Tyrance, Himmelstein, & Woolhandler, 1996). In addition, inadequately managed post-hospital care results in increased readmission rates (Maness & Khan, 2014). Moreover, a lack of regular preventive care results in repeated emergency department visits, higher rates of hospitalization, and more costly treatment (National Center on Family Homelessness, 2009). Hospital stays for adults experiencing homelessness average four days longer than their stably housed peers, for an additional cost of approximately \$2,414 per stay (Salit et al., 1998).

By the age of 12, 83 percent of children experiencing homelessness have been exposed to at least one violent event (Bassuk et al., 1996). These children are 15 percent

more likely to need mental health services to recover from the impact of trauma when compared to their peers. The average annual cost for mental health services for children is \$2,865 per episode (Miller, Cohen, & Wiersema, 1996).

Education

Children experiencing homelessness have higher dropout rates than their stably housed peers. Only one in four students who have experienced homelessness graduate from high school (National Center on Family Homelessness, 2009). Students who drop out of high school earn on average \$200,000 less over their lifetime than high school graduates. The net lifetime contributions lost to society after accounting for the costs that would be incurred to improve education are \$127,000 per non-graduating student (Levin, Belfield, Muennig, & Rouse, 2007).

It should be noted that the literature described above which characterizes homeless families is primarily based on the HUD or general definition of homelessness and not the DOE definition of homelessness that includes additional residential situations to identify homeless students. Currently, literature that characterizes student homelessness is limited. This research extends the literature on student homelessness, particularly as it relates to students living doubled up and living in motels.

Developing a Typology of Homeless Families

While a broad understanding of family homelessness is captured from research conducted to date, there are still a number of unanswered questions about the population (Tobin & Murphy, 2013). By developing typologies to understand and address healthcare utilization patterns, behavior, and academic performance of school-aged children experiencing homelessness among distinct clusters, a strong foundation will be created to

allow researchers, policymakers, and clinicians a better understanding of children's needs. This better understanding lays the groundwork for reallocating and leveraging resources to better serve school-aged children experiencing homelessness, to ensure services and resources are being provided and distributed appropriately, and to inform both health and public policy change.

The goals of a typology guide the selection of the overall approach, the variables to include, and the ways in which the typology can be validated. While there has been limited attention to typologies for families, and particularly school-age children (Rog, Holupka, & Patton, 2007), the literature that is most relevant involves efforts to develop typologies and classification systems for a range of homeless sub-populations (Culhane et al., 2007; Kuhn & Culhane, 1998; McAllister, Lennon, & Kuang, 2011).

There are various dimensions to typologies, including whether the typology is based on theory or developed empirically (Rog & Buckner, 2007); whether it is developed on one variable or dimension, or multiple dimensions and variables (Kuhn & Culhane, 1998); the nature and measurement of the variables used (McAllister, Lennon, & Kuang, 2011); and whether the variables include only risk factors or strengths as well (Danesco & Holden, 1998). Moreover, some typologies are developed using qualitative data (Kluge, 2000), while others use quantitative data, often by cluster analysis (Babor et al., 1992). The variations often relate to the purposes of the typology, as well as the state of the knowledge in an area (Rog, Holupka, & Patton, 2007).

Typologies of homelessness have theoretical, clinical, and practical functions (Culhane et al., 2007; National Healthcare for the Homeless Council, 2013; Kuhn & Culhane, 1998; McAllister, Lennon, & Kuang, 2011; Rog, Holupka, & Patton, 2007).

Typologies help researchers, clinicians, policymakers, and the public move beyond a surface-level understanding of the homeless population by crafting theoretical categories that address distinctions among homeless subsets (Culhane et al., 2007; Rog, Holupka, & Patton; 2007). Theoretical categories often consider the mechanisms that contribute to and sustain homelessness (Kuhn & Culhane, 2007; McAllister, Lennon, & Kuang, 2011). In terms of clinical functions, typologies of homelessness can facilitate client-service matching, in which patients are provided the most appropriate services based upon their typological classifications. These typologies have important implications for how resources and services are allocated on a broader scale through policymaking and can inform the design of prevention and intervention strategies (National Healthcare for the Homeless Council, 2013).

Criteria for Evaluating a Typology

In evaluating the usefulness of a typology, several criteria can be used (Babor et al., 1992; Epstein et al., 2002). The typology can be examined to determine whether it satisfies the following conditions: (1) Results in subgroups that have homogeneity within them; (2) results in subgroups that are non-overlapping and have discriminant validity (Culhane et al., 2007; Kuhn & Culhane, 1998; McAllister, Lennon, & Kuang, 2011); (3) is comprehensive in its coverage of the overall population; (4) demonstrates construct validity by having the theoretical constructs empirically supported (McAllister, Lennon, & Kuang, 2011; Rog, Holupka, & Patton, 2007), and (5) has predictive validity in that members of different subgroups show different patterns of homelessness and different responses to treatments (i.e., has clinical utility) (Rog, Holupka, & Patton, 2007).

Developing distinct homogeneous subgroups is aided by the use of rich data systems that cover the complexities of the population. One of the challenges in the study of homeless families, however, is to identify data systems that provide comprehensive coverage of the population. Many of the existing homeless families' data systems involve a subset of the population, such as first-time homeless families or families with multiple problems. Others are limited geographically and would have questionable external validity given the context-dependent nature of homelessness (Culhane et al., 2007). However, others such as the National Survey of Homeless Assistance Providers and Clients (NSHAPC) provide greater external validity and a less selective population, but fully understanding the complexity of the individual groups is still lacking. Similarly, few data sets currently available provide the longitudinal perspective needed to examine the predictive validity of the typology (Rog, Holupka, & Patton, 2007).

Testing a Typology of Homeless Families

Researchers have been developing typologies of homeless families using various methods for over a decade. However, the most commonly adopted method is called a time-aggregated approach developed by Kuhn and Culhane (1998). While other approaches have been introduced in the literature, they have not gained the same reception as the time-aggregated approach. This section will present an example of the more commonly used time-aggregated approach and a newer method introduced in the literature, time-patterned approach, to developing typologies of homeless families for purposes of better allocation of services to families, more efficient use of resources, and ultimately - lower costs to society.

Time-aggregated Approach

In 1998, Kuhn and Culhane first introduced a time-aggregated typology of homeless *individuals*, followed by a second time-aggregated typology investigating whether a parallel typology for homeless *families* had similar validity. More specifically, the authors hypothesized that if the differential patterns by which families experienced homelessness are likewise associated with differences in characteristics and needs, then it may be possible that subpopulations of shelter users could be matched to alternative housing and service interventions that better meet their needs in a more cost-effective manner than the current shelter system and with fewer negative impacts on children (Culhane et al., 2007).

Specifically, Culhane and colleagues were interested in whether longitudinal shelter utilization data indicated robust patterns of family homelessness and whether there were differential patterns of family shelter utilization associated with distinguishing characteristics of the head of household. Using administrative data on public shelter utilization from four jurisdictions (i.e., Philadelphia, New York City, Columbus OH, and Massachusetts), they merged shelter records with public behavioral health and human service records to create a unique dataset to use for cluster analysis to explore the existence of unique subsets of homeless families on the basis of the number of homeless episodes and the number of cumulative shelter days during the observation period. Cluster analysis was designed to assign families to one of three distinct subsets of homeless families, demographic characteristics, shelter episodes, and other public services use (Culhane et al., 2007).

Cluster analyses revealed comparably sized groupings across the jurisdictions. For all jurisdictions, the largest cluster was composed of families with a single episode of shelter use of relatively short duration, followed by families with fewer than 1.5 on average episodes of shelter use of relatively long duration, and families experiencing repeated shelter stays – 3 to 3.5 on average – of relatively short duration (Culhane et al., 2007).

In terms of the relative use of shelter system resources, the groups exhibited fairly comparable results across sites. In all four jurisdictions, approximately half of the total bed days were used by the family households in the long-stay category; the short stay group (or temporarily homeless) used between 32 and 43 percent of the system days; the episodic shelter users accounted for the most variable proportion of days, but the fewest overall, with a range from 5 to 13 percent. These utilization patterns are similar to the utilization patterns of unaccompanied homeless adults: transitional homeless (short stay), episodic homelessness (repeated stays), and chronic homelessness (long stay). In terms of disabilities and other behavioral health barriers, however, results indicated that unlike single adults, long-term use among families was not associated with evidence of more intensive service needs or personal barriers to housing stability (the opposite is true for single adults experiencing homelessness). Alternatively, episodic shelter use did appear to be associated with a subset of families with significantly higher rates of intensive service use (Culhane et al., 2007).

Culhane and colleagues used shelter days results to convert into estimated costs based on jurisdictional reimbursement rates. Per family, the long-stay groups had an average annual cost of \$21,692 in Columbus (\$116 per day), \$30,812 in Philadelphia

(\$94.23 per day), \$48,440 in Massachusetts (\$110 per day), and \$55,200 in New York (\$100 per day). The short-stay households, although they demonstrated higher rates of intensive services use, had substantially lower annual shelter costs per family (between \$3,828 and \$13,900 across jurisdictions). It should be noted that these costs were likely significant underestimates in that they did not include the additional resources that providers received beyond their per diem reimbursements (such as service contracts with other public agencies and private source donations) (Culhane et al., 2007).

The results suggested a lack of congruence between shelter use patterns and household needs, indicating that the current system is both inequitable and inefficient. More specifically, half of the system's resources were being used by a relatively small group of long-staying families, at a very significant cost per unit, although those families did not have a compellingly distinct profile of need relative to the other clusters. Culhane and colleagues (2007) highlighted the issue of whether families in the comparatively short shelter stays and the long stays among households with few or no apparent barriers to exit could be made even shorter if a different and possibly more efficient form of emergency assistance were available (e.g., relocation assistance program, a.k.a. "Housing First" rapid rehousing models) (Culhane et al., 2007).

Time-patterned Approach

Differing significantly from the more familiar 3-group typology introduced by Kuhn and Culhane (1998), McAllister and colleagues (2011) suggest a time-patterned approach to temporality using a 10-group typology. In policymaking, the 3-category typology has been adopted by the federal government to define homeless subpopulations and prioritize the federal response to homelessness (i.e., end chronic homelessness by

2017 and end family homelessness by 2020). McAllister and colleagues argue that while this typology is strongly supported with extensive research and policy influence, it has limitations that undermine its usefulness (McAllister, Lennon, & Kuang, 2011).

McAllister and colleagues (2011) offer an alternative approach to the 3-category typology more widely used. They suggest a time-patterned approach rather than a time-aggregated approach to avoid the loss of potentially important temporal information about the timing and duration of each shelter and out-of-shelter episode. A time-patterned approach does not require aggregating; rather, it allows sequencing and timing of shelter and non-shelter episodes and thus measures their frequency and duration over time. More specifically, it does so by initially comparing for all dyads in the data set, the sequence of families' sheltered and non-sheltered episodes, when each episode happened, and how long each lasted and then grouping together people whose histories are relatively most similar. Using Kuhn and Culhane's (1998) data to develop the 3-group typology for homeless individuals, McAllister and colleagues developed a 10-group typology using that comparable, but more recent data from the same data source. Their 10-group typology resulted in significantly less within-group heterogeneity than the 3-group time-aggregated typology and identified patterns substantively different from those articulated by Culhane and colleagues (2007). Their 10-group typology is organized into 4 patterns: (1) a *temporary* pattern consisting of 1 group whose members enter shelters once, stay for less than 30 days, and do not return; (2) a *structured-continuous* pattern consisting of 6 groups whose members stay continuously sheltered for progressively longer periods of time after first entering and then return sporadically for very brief periods, if they do return; (3) a *structured-intermittent* pattern consisting of 2 groups distinguished by their

members entering and exiting shelters for different lengths of time and at different points in the observation period; and (4) an *unstructured-intermittent* pattern consisting of 1 group whose members enter and exit shelters sporadically and stay for very brief periods (McAllister, Lennon, & Kuang, 2011).

The key distinctive feature of the time-patterned 10-group typology, relative to the 3-group time-aggregated approach, is that it grouped together people who move between being sheltered and not being sheltered at similar points after experiencing similar durations of each. The analytic utility of homelessness typologies formed by a time-patterned approach is that such typologies make explicit the kinds and structure of transitions in homeless people's lives. This explicitness can foster theorizing how and why such changes occur and can allow sophisticated testing of the theory. While McAllister and colleagues presented an alternative approach to Kuhn and Culhanes 3-group typology, the authors note that, since it has not been developed theoretically, they are not proposing to replace the 3-group typology with their 10-group typology. Rather, they use it as an illustration that the temporal-only approach may not provide the depth of description necessary to make good policy decisions (McAllister, Lennon, & Kuang, 2011).

Both the time-aggregated and time-patterned approaches are empirically created typologies for homeless families to help better understand the trajectories of families experiencing homelessness. These approaches are presented here to show how researchers have demonstrated typology development to better understand homeless families. While both approaches provide promising features in moving beyond a homogeneous understanding of homeless families, they are limited in their scope since

these typologies were derived from information gained only by homeless families living in shelters - representing a small proportion of families experiencing homelessness. Additionally, while both approaches help us better understand homeless families, they do not provide a better understanding of the children within these families. The difference in these approaches and this research is that to date, there are no typologies that have been created specifically for homeless students to help us move beyond a homogeneous understanding of the homeless student population. Rather, the research to date on homeless students does not take into consideration the housing effect of students experiencing homelessness. Therefore, rather than use cluster analysis to derive unique groups of homeless students, as is often done in the typology research of homeless families, this research examines the de facto typology already in use by the McKinney-Vento Act by examining the effect of housing type on student outcomes. This research is a first attempt to moving beyond a homogeneous understanding of homeless students and results have the potential to contribute substantially to how we identify and support students experiencing homelessness.

CHAPTER 3: RESEARCH DESIGN AND METHODS

This study utilized an exploratory research design. While the existing literature presents typologies for and identifies distinguishing characteristics of homeless families, there is little research that specifically addresses typologies for or distinguishing characteristics of homeless students. The purpose of this study is to gain better insight into this subpopulation of individuals experiencing homelessness and to attempt to lay the groundwork for future research. This research tests an underutilized homelessness typology created by the education provisions in the McKinney-Vento Homeless Act to determine if it could be supported as a prospective approach to better understand homeless students, particularly their academic performance, attendance, behavior, and healthcare utilization.

Research Question & Hypotheses

Considering this exploratory design, this research is guided by the following broad research question: *Does the McKinney-Vento Housing Type Indicator provide an effective typology to understand differences in academic performance, school attendance, problem behavior, and healthcare utilization among homeless students?* It is hypothesized that:

1. Differential patterns of academic performance will be associated with distinguishing characteristics of student's housing type.

2. Differential patterns of student attendance will be associated with distinguishing characteristics of student's housing type.
3. Differential patterns of behavior will be associated with distinguishing characteristics of student's housing type.
4. Differential patterns of healthcare utilization will be associated with distinguishing characteristics of student's housing type.
5. Differential patterns of academic performance depending on student's healthcare utilization patterns will be associated with distinguishing characteristics of student's housing type.
6. Differential patterns of school attendance depending on student's healthcare utilization patterns will be associated with distinguishing characteristics of student's housing type.
7. Differential patterns of behavior depending on student's healthcare utilization patterns will be associated with distinguishing characteristics of student's housing type.

The research examined these hypotheses through the following specific aims:

1. Compare mean differences in academic performance among MCV students' housing type.
2. Compare mean differences in school attendance among MCV students' housing type.
3. Compare mean differences in behavior among MCV students' housing type.
4. Compare mean differences in healthcare utilization among MCV students' housing type.

Data Collection

This research required obtaining data from both Charlotte-Mecklenburg Schools (CMS) and Carolinas Healthcare System (CHS). Student data obtained through CMS was matched with students' hospital records obtained through CHS. Considering this research was dependent on obtaining a sufficient match of hospital records, the decision to use hospital records from CHS was warranted considering the system's main hospital and headquarters is located in Charlotte, NC and the students included in this research live in the Charlotte-Mecklenburg area. Additionally, CHS has grown into one of the nation's largest and most comprehensive systems, with more than 7,460 licensed beds (acute care and post-acute care), and an annual budget exceeding \$7.7 billion ("Carolinas Healthcare System," n.d.). Further, through 2012, CHS held a contract with Mecklenburg County to provide indigent care for local citizens. While, certainly, it would have been ideal to obtain hospital records from all providers in the area, the time involved in establishing relationships and undergoing each system's protocols for obtaining data would have been unrealistic given the parameters of this research.

While the purpose of this research was to examine healthcare utilization patterns, academic performance, attendance, and behavior among McKinney-Vento Status students, a secondary implication from this research demonstrated how two complex entities partnered to combine existing data to make this research possible. Both entities have their own established protocols for obtaining and using existing data and these establishments came together and agreed to share data as they saw the value and potential in this research. By demonstrating effective collaboration, these entities provided a

gateway for this unique opportunity that addresses an important gap in the homelessness research.

CMS and CHS Protocols

This research first required a number of approvals by the University of North Carolina at Charlotte (UNCC), CMS, and CHS. First, a protocol was prepared and submitted by the researcher to the UNCC Institutional Review Board (IRB) for review and approval to conduct this research. Upon UNCC IRB approval and per CMS' protocol for obtaining data from CMS for research purposes, a CMS research application was prepared by the researcher and submitted to the CMS Research, Evaluation, and Analytics department within the Office of Accountability for review. Once approved by the CMS Research Review Panel, a Letter of Support was initiated between CMS and CHS documenting that both organizations supported this dissertation research. After the Letter of Support was signed by both parties, a Data Use Agreement between the researcher and CHS was executed. Next, a CHS IRB application was prepared by the researcher and Dr. Melanie Spencer. Dr. Melanie Spencer submitted the completed CHS IRB application to the CHS IRB review panel and the CHS Data Governance committee. Upon approval by the CHS Data Governance committee, CHS then entered into an IRB review agreement with UNCC. Entering into this agreement was the final step of the process to move this research forward.

Data

A list of students from CMS designated as homeless at any time between the first day of the 2007-2008 school year and the last day of the 2012-2013 school year using the McKinney-Vento Status (MCV) indicator was compiled from multiple relational current

and historical databases within the CMS data warehouse. These data were available for disaggregation to identify “housing type” for students (i.e., literally homeless; living in a shelter; living “doubled up”; or living in a motel) by school year. Additional variables extracted from CMS’ historical and current relational databases included students’ legal first name, legal last name, date of birth (DOB), age, home address, gender, race/ethnicity, Limited English Proficient (LEP) status, Exceptional Child (EC) status, school year, school assignment, date(s) entered as MCV, date(s) exited as MCV, percentage of days attended, in-school suspensions (ISS), out-of-school suspensions (OSS), total incidents, incidents that resulted in ISS, incidents that resulted in OSS, retentions, end-of-grade (EOG) reading test scores, EOG math test scores, end-of-course (EOC) Algebra I test scores, and EOC English II test scores.

Additional derived variables included total years the student experienced homelessness while enrolled in CMS, total number of days the student experienced homelessness while enrolled in CMS, total number of days the student experienced homelessness while enrolled in CMS by school year, and total number of homeless episodes experienced by the student while enrolled in CMS. These data were extracted for each school year that the student was identified as homeless while enrolled in CMS within the 2007-2008 and 2012-2013 school years. The final sample of CMS students represented in the dataset included 11,842 students. Of those 11,842 CMS students, 5.8% (n=685) were identified as living in a shelter, 79.6% (n=9,424) were living doubled up with family or friends, 6.0% (n=716) were living as literally homeless, and 8.6% (n=1,017) were living in a motel.

Next, this unique dataset containing MCV students provided by CMS was uploaded to a password-protected USB flash drive and was hand delivered, per approved UNCC IRB protocol, by the researcher to Dr. Melanie Spencer, Assistant Vice President of Applied Outcomes Research at Data Advanced Analytics Group (DA2) of CHS. The CMS data was then uploaded by a designated DA2 staff member in order to execute a match of MCV students' ambulatory, emergency, inpatient, and outpatient primary encounters, primary procedures, and primary diagnoses. CMS data was matched to CHS data using the following unique student identifiers: Legal last name, legal first name, and DOB. CHS data were extracted from CHS' IDX and STAR databases. Data extracted by CHS included primary encounter type, primary procedure, and primary diagnosis records for matched CMS students from 2007 through 2013. Specifically, CHS data included primary encounter type (i.e., inpatient, outpatient, ambulatory, or emergency), primary location for the encounter, procedure code for the encounter, description of procedure code, diagnosis code for the encounter, description of diagnosis code, and insurance coverage used for the encounter. It should be noted that CHS' date(s) services received and CMS' date(s) the student entered and exited McKinney-Vento status were used for matching purposes to ensure that medical services were received while the student was experiencing homelessness. The final matched dataset was de-identified by CHS staff before releasing to the researcher for analysis.

CHS staff included the variable, 'homeless indicator,' in the de-identified matched dataset to indicate if the healthcare encounter record occurred while the student was confirmed homeless using the McKinney-Vento entry and exit dates provided in the CMS dataset. Of the 11,842 CMS students in the full de-identified matched dataset, 4,867

CMS students had matching CHS data, resulting in a match rate of 42.1 percent. Of those 4,867 CMS students, 5.8% (n=280) were identified as living in a shelter, 80.3% (n=3,908) were living doubled up with family or friends, 6.7% (n=324) were living as literally homeless, and 7.3% (n=355) were living in a motel. Several of the dependent variables provided by CHS were used to create derived dependent variables to better understand students' healthcare utilization patterns (described in more detail in Chapter 4). Additionally, data were received in a long format file structure, with one student/health record combination per row. Therefore, it was necessary to aggregate the data by school year to prepare the data for analysis.

Analysis

Students were examined by their housing type groups as defined by the McKinney-Vento Act (i.e., living doubled up, living in a shelter, living in a hotel/motel, or literally homeless). Differences in academic performance, school attendance, behavior, and healthcare utilization among the distinct housing type groups were determined to evaluate the predictive utility of the de facto typology in use for student outcomes.

Analyses first included descriptive statistics to illustrate the relationships between the independent variable (i.e., housing type groups) and the dependent variables. Next, for the students that were included in this research, the majority were designated MCV status one time having one homeless episode and one housing type (i.e., living doubled up; literally homeless; living in a shelter; living in a hotel/motel) while a smaller number of students were designated MCV status more than one time. For students with more than one time point, none were identified with having a changed housing type status. Therefore, since we did not identify any students that changed housing type statuses from

one time point to the next, multilevel modeling was determined impractical for this research. Additionally, for the CMS student sample, only 21.9% (n=2,599 of 11,842) of the students were represented in the data at three or more time points. Once these students were disaggregated by their housing type, group sizes decreased significantly to 115 students living in a shelter, 2,126 students living doubled up, 178 students living as literally homeless, and 180 students living in a motel. For the CHS student sample, only 7.9% (n=384 of 4,867) of the students were represented in the data at three or more time points. Once these students were disaggregated by their housing type, group sizes decreased significantly to 13 students living in a shelter, 321 students living doubled up, 28 students living as literally homeless, and 22 students living in a motel. In addition, because students experiencing homelessness tend to be transient, outcome data is not available for all students at each time point for which they are represented in the dataset. Therefore, for outcome analyses, the number of students that would actually be included would be even less than the samples presented above. Therefore, it was determined that the data available did not support conducting longitudinal analysis due to small sample sizes at three or more time points, particularly once students were disaggregated by their housing type. (See Table 1 for a detailed summary of the sample by data source, housing type, and time point. See Table 2 for a detailed summary of the sample by housing type, time point, and outcome.)

Table 1. Study sample by data source, housing type, and time point.

		Housing type				
Data source	Time point	Shelter	Doubled up	Homeless	Motel	Total
CMS	Time 1	685 (59.3%)	9,424 (53.6%)	716 (52.8%)	1,017 (58.4%)	11,842
	Time 2	303 (26.2%)	4,919 (28.0%)	380 (28.0%)	425 (24.4%)	6,027 (50.9%)
	Time 3	115 (10.0%)	2,126 (12.1%)	178 (13.1%)	180 (10.3%)	2,599 (21.9%)
	Time 4	39 (3.4%)	799 (4.5%)	55 (4.1%)	77 (4.4%)	970 (8.2%)
	Time 5	10 (0.9%)	259 (1.5%)	21 (1.6%)	34 (2.0%)	324 (2.7%)
	Time 6	4 (0.4%)	58 (0.3%)	6 (0.4%)	8 (0.5%)	76 (0.6%)
CHS	Time 1	280 (75.1%)	3,908 (70.5%)	324 (71.5%)	355 (74.7%)	4,867
	Time 2	79 (21.2%)	1,214 (21.9%)	97 (21.4%)	93 (19.6%)	1,483 (30.5%)
	Time 3	13 (3.5%)	321 (5.8%)	28 (6.2%)	22 (4.6%)	384 (7.9%)
	Time 4	1 (0.3%)	88 (1.6%)	3 (0.7%)	3 (0.6%)	95 (2.0%)
	Time 5	0 (0.0%)	8 (0.1%)	1 (0.2%)	2 (0.4%)	11 (0.2%)
	Time 6	0 (0.0%)	4 (0.1%)	0 (0.0%)	0 (0.0%)	4 (0.1%)

Table 2. Study sample by housing type, time point, and outcome.

		Housing type					
	Outcome	Time point	Shelter	Doubled up	Homeless	Motel	Total
Academic performance	EOG reading	Time 1	254 (65.1%)	4,109 (62.9%)	214 (62.4%)	411 (65.3%)	4,988
		Time 2	95 (24.4%)	1,667 (25.5%)	96 (28.0%)	143 (22.7%)	2,001
		Time 3	32 (8.2%)	579 (8.9%)	25 (7.3%)	51 (8.1%)	687
		Time 4	7 (1.8%)	145 (2.2%)	6 (1.8%)	20 (3.2%)	178
		Time 5	2 (0.5%)	31 (0.5%)	2 (0.6%)	4 (0.6%)	39
		Time 6	0	2	0	0	2

			Housing type					
	Outcome	Time point	Shelter	Doubled up	Homeless	Motel	Total	
			(0.0%)	(0.03%)	(0.0%)	(0.0%)		
	EOG math	Time 1	270 (64.3%)	4,334 (61.3%)	229 (61.7%)	416 (64.4%)	5,249	
		Time 2	103 (24.5%)	1,842 (25.8%)	107 (28.8%)	149 (23.1%)	2,183	
		Time 3	37 (8.8%)	677 (9.6%)	27 (7.3%)	56 (8.7%)	797	
		Time 4	7 (1.7%)	183 (2.6%)	6 (1.6%)	19 (2.9%)	215	
		Time 5	3 (0.7%)	45 (0.6%)	2 (0.5%)	6 (0.9%)	56	
		Time 6	0 (0.0%)	7 (0.1%)	0 (0.0%)	0 (0.0%)	7	
	EOC English 1	Time 1	34 (97.1%)	675 (93.8%)	69 (95.8%)	47 (94.0%)	825	
		Time 2	1 (2.9%)	45 (6.3%)	3 (4.2%)	2 (4.0%)	51	
		Time 3	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (2.0%)	1	
	EOC Algebra 1	Time 1	39 (100.0%)	724 (96.0%)	68 (93.2%)	44 (93.6%)	875	
		Time 2	0 (0.0%)	27 (3.6%)	5 (6.9%)	3 (6.4%)	35	
		Time 3	0 (0.0%)	3 (0.4%)	0 (0.0%)	0 (0.0%)	3	
	Attendance outcomes	Percent days attended	Time 1	678 (59.2%)	9,395 (53.8%)	712 (53.1%)	1,008 (58.8%)	11,793
			Time 2	300 (26.2%)	4,893 (28.0%)	375 (28.0%)	419 (24.5%)	5,987
			Time 3	114 (10.0%)	2,062 (11.8%)	174 (12.9%)	168 (9.8%)	2,518
			Time 4	39 (3.4%)	798 (4.6%)	54 (4.0%)	77 (4.5%)	968
			Time 5	10 (0.9%)	258 (1.5%)	20 (1.5%)	35 (2.0%)	323
Time 6			4 (0.4%)	58 (0.3%)	6 (0.5%)	7 (0.4%)	75	
Behavior outcomes	Total ISS days	Time 1	678 (59.2%)	9,395 (53.8%)	712 (53.1%)	1,008 (58.8%)	11,793	
		Time 2	300 (26.2%)	4,893 (28.0%)	375 (28.0%)	419 (24.5%)	5,987	
		Time 3	114 (10.0%)	2,062 (11.8%)	174 (12.9%)	168 (9.8%)	2,518	
		Time 4	39 (3.4%)	798 (4.6%)	54 (4.0%)	77 (4.5%)	968	
		Time 5	10 (0.9%)	258 (1.5%)	20 (1.5%)	35 (2.0%)	323	

		Housing type					
Outcome	Time point	Shelter	Doubled up	Homeless	Motel	Total	
	Time 6	4 (0.4%)	58 (0.3%)	6 (0.5%)	7 (0.4%)	75	
	Total OSS days	Time 1	678 (59.2%)	9,395 (53.8%)	712 (53.1%)	1,008 (58.8%)	11,793
		Time 2	300 (26.2%)	4,893 (28.0%)	375 (27.9%)	419 (24.5%)	5,987
		Time 3	114 (10.0%)	2,062 (11.8%)	174 (12.9%)	168 (9.8%)	2,518
		Time 4	39 (3.4%)	798 (4.6%)	54 (4.0%)	77 (4.5%)	968
		Time 5	10 (0.9%)	258 (1.5%)	20 (1.5%)	35 (2.0%)	323
		Time 6	4 (0.4%)	58 (0.3%)	6 (0.5%)	7 (0.4%)	75
	Total Incidents	Time 1	645 (58.1%)	8,923 (53.1%)	669 (52.0%)	958 (58.0%)	11,195
		Time 2	298 (26.8%)	4,721 (28.1%)	361 (28.1%)	405 (24.5%)	5,785
		Time 3	115 (10.4%)	2,053 (12.2%)	174 (13.5%)	170 (10.3%)	2,512
		Time 4	39 (3.5%)	799 (4.8%)	55 (4.3%)	77 (4.7%)	970
		Time 5	10 (0.9%)	259 (1.5%)	21 (1.6%)	34 (2.1%)	324
		Time 6	4 (0.4%)	58 (0.3%)	6 (0.5%)	8 (0.5%)	76
	Total Incidents – ISS	Time 1	645 (58.1%)	8,923 (53.1%)	669 (52.0%)	958 (58.0%)	11,195
		Time 2	298 (26.8%)	4,721 (28.1%)	361 (28.1%)	405 (24.5%)	5,785
		Time 3	115 (10.4%)	2,053 (12.2%)	174 (13.5%)	170 (10.3%)	2,512
		Time 4	39 (3.5%)	799 (4.8%)	55 (4.3%)	77 (4.7%)	970
		Time 5	10 (0.9%)	259 (1.5%)	21 (1.6%)	34 (2.1%)	324
		Time 6	4 (0.4%)	58 (0.3%)	6 (0.5%)	8 (0.5%)	76
Total Incidents – OSS	Time 1	645 (58.1%)	8,923 (53.1%)	669 (52.0%)	958 (58.0%)	11,195	
	Time 2	298 (26.8%)	4,721 (28.1%)	361 (28.1%)	405 (24.5%)	5,785	
	Time 3	115 (10.4%)	2,053 (12.2%)	174 (13.5%)	170 (10.3%)	2,512	
	Time 4	39 (3.5%)	799 (4.8%)	55 (4.3%)	77 (4.7%)	970	
	Time 5	10 (0.9%)	259 (1.5%)	21 (1.6%)	34 (2.1%)	324	

			Housing type				
	Outcome	Time point	Shelter	Doubled up	Homeless	Motel	Total
			(0.9%)	(1.5%)	(1.6%)	(2.1%)	
		Time 6	4 (0.4%)	58 (0.3%)	6 (0.5%)	8 (0.5%)	76
Healthcare outcomes	Ambulatory encounters	Time 1	280 (75.1%)	3,908 (70.5%)	324 (71.5%)	355 (74.7%)	4,867
		Time 2	79 (21.2%)	1,214 (21.9%)	97 (21.4%)	93 (19.6%)	1,483
		Time 3	13 (3.5%)	321 (5.8%)	28 (6.2%)	22 (4.6%)	384
		Time 4	1 (0.3%)	88 (1.6%)	3 (0.7%)	3 (0.6%)	95
		Time 5	0 (0.0%)	8 (0.1%)	1 (0.2%)	2 (0.4%)	11
		Time 6	0 (0.0%)	4 (0.1%)	0 (0.0%)	0 (0.0%)	4
	Outpatient encounters	Time 1	280 (75.1%)	3,908 (70.5%)	324 (71.5%)	355 (74.7%)	4,867
		Time 2	79 (21.2%)	1,214 (21.9%)	97 (21.4%)	93 (19.6%)	1,483
		Time 3	13 (3.5%)	321 (5.8%)	28 (6.2%)	22 (4.6%)	384
		Time 4	1 (0.3%)	88 (1.6%)	3 (0.7%)	3 (0.6%)	95
		Time 5	0 (0.0%)	8 (0.1%)	1 (0.2%)	2 (0.4%)	11
		Time 6	0 (0.0%)	4 (0.1%)	0 (0.0%)	0 (0.0%)	4
	Inpatient encounters	Time 1	280 (75.1%)	3,908 (70.5%)	324 (71.5%)	355 (74.7%)	4,867
		Time 2	79 (21.2%)	1,214 (21.9%)	97 (21.4%)	93 (19.6%)	1,483
		Time 3	13 (3.5%)	321 (5.8%)	28 (6.2%)	22 (4.6%)	384
		Time 4	1 (0.3%)	88 (1.6%)	3 (0.7%)	3 (0.6%)	95
		Time 5	0 (0.0%)	8 (0.1%)	1 (0.2%)	2 (0.4%)	11
		Time 6	0 (0.0%)	4 (0.1%)	0 (0.0%)	0 (0.0%)	4
	Emergency encounters	Time 1	280 (75.1%)	3,908 (70.5%)	324 (71.5%)	355 (74.7%)	4,867
		Time 2	79 (21.2%)	1,214 (21.9%)	97 (21.4%)	93 (19.6%)	1,483
		Time 3	13 (3.5%)	321 (5.8%)	28 (6.2%)	22 (4.6%)	384
		Time 4	1 (0.3%)	88 (1.6%)	3 (0.7%)	3 (0.6%)	95

			Housing type				
Outcome	Time point	Shelter	Doubled up	Homeless	Motel	Total	
	Time 5	0 (0.0%)	8 (0.1%)	1 (0.2%)	2 (0.4%)	11	
	Time 6	0 (0.0%)	4 (0.1%)	0 (0.0%)	0 (0.0%)	4	
Managed care insurance type	Time 1	10 (90.9%)	141 (88.1%)	11 (78.6%)	21 (100.0%)	183	
	Time 2	1 (9.1%)	19 (11.9%)	3 (21.4%)	0 (0.0%)	23	
Medicaid insurance type	Time 1	126 (90.7%)	1,600 (87.7%)	112 (87.5%)	172 (88.2%)	2,010	
	Time 2	13 (9.4%)	225 (12.3%)	16 (12.5%)	23 (11.8%)	277	
Commercial insurance type	Time 1	0 (0.0%)	20 (90.9%)	2 (100.0%)	3 (100.0%)	25	
	Time 2	0 (0.0%)	2 (9.1%)	0 (0.0%)	0 (0.0%)	2	
Other insurance type	Time 1	16 (100.0%)	108 (100.0%)	8 (100.0%)	8 (100.0%)	140	
Self-pay insurance type	Time 1	20 (100.0%)	249 (98.8%)	23 (92.0%)	33 (97.1%)	325	
	Time 2	0 (0.0%)	3 (1.2%)	2 (8.0%)	1 (2.9%)	6	
Champus insurance type	Time 1	0 (0.0%)	3 (100.0%)	0 (0.0%)	1 (100.0%)	4	
Indigent insurance type	Time 1	0 (0.0%)	11 (100.0%)	0 (0.0%)	2 (66.7%)	13	
	Time 2	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (33.3%)	1	
Facility billing insurance type	Time 1	1 (100.0%)	2 (100.0%)	3 (100.0%)	0 (0.0%)	6	
NC agency correctional institution insurance type	Time 1	0 (0.0%)	6 (100.0%)	2 (100.0%)	1 (100.0%)	9	
ACS ED admissions	Time 1	22 (95.7%)	328 (97.6%)	26 (92.9%)	33 (97.1%)	409	
	Time 2	1 (4.3%)	8 (2.4%)	2 (7.1%)	1 (2.9%)	12	
Emergent ED admissions	Time 1	0 (0.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	2	

It should also be noted that for 1,700 students, the McKinney-Vento exit date was missing. While it is possible that these students had not exited McKinney-Vento status by the end of the 2012-2013 school year, feedback received from the McKinney-Vento Specialist at CMS indicated that the majority of these cases were most likely a result of the school's MCV social worker not exiting the student correctly. Therefore, since only slightly over 20 percent of students were represented in the dataset with three or more time points and there was potentially data quality issues for students with multiple time points, it was determined that for this research, the student's first homeless occurrence would be used for students showing up more than once in the dataset since they would look most like students with only one homeless occurrence.

All statistical analysis was performed using SAS version 9.4. Alpha level of 0.05 was used for determination of statistical significance. For descriptive statistics, categorical variables were reported as percentages and compared using the Pearson Chi-Square statistic. Continuous variables were reported as means with standard deviations. For inferential statistics, one-way analysis of variance (ANOVA) tests were conducted to compare the effect of housing type group on the dependent variables. Type III Sum of Squares (SS) were used to determine significance of each model produced since Type III SS weights cells differently whereas Type I and Type II SS weight observations equally. This was important since the sample sizes between the four housing type categories were not equal. Specifically, the number of students represented in the "living doubled up" housing type category was considerably larger compared to the other three housing type categories. For significant results produced from the ANOVA tests, post hoc Tukey's HSD test was performed to determine exactly which groups differed. To address the last

three hypotheses described above, mean differences between groups were compared using one-way ANOVA and independent group t-tests.

Advantages and Limitations

A key advantage of using this unique dataset for this research was its comprehensive coverage of the MCV population in one school district. While many existing homeless families' data systems involve only a subset of the population and often represent families with the most need, this dataset contained any student identified as MCV at any time over a six year period (2007-2008 school year through 2012-2013 school year) while enrolled in CMS schools – regardless of the extent of need. However, it should be noted that this dataset was limited geographically, containing data on MCV students only while living in Mecklenburg County and enrolled in CMS schools, therefore, having questionable external validity. In addition, we were not able to apply the longitudinal perspective that we had originally intended. It is recommended that for future research, the same methods be applied to examine outcomes over time and then compare the results from this study.

Further, it should be emphasized that this is exploratory research. The objective of this research is to gather preliminary information that will help better define the differences between the housing type groups of homeless students. The results of this exploratory research are not intended to be used for decision-making purposes, but rather, to provide insight into better understanding homeless students and to lay the groundwork for future studies. Because of the exploratory nature of this research, confounding variables were not considered. However, this research sets the framework for future studies that should consider confounding variables to determine whether the distinct

differences between housing type groups identified in this study still hold true in causal comparative research designs.

Moreover, the significant differences identified in this research may or may not be a reflection of outcomes for students who are experiencing homelessness for the first time. For the sample of students used in this research, we were not able to determine whether this was the student's first homeless occurrence *ever* or their first homeless occurrence since being enrolled in CMS. Therefore, we cannot say for certain whether these results would look the same if we were able to distinguish between students who had experienced homelessness one time only or multiple times. Another limitation of this research, or future research, may be how the MCV status indicator is applied and used. For some students, they are identified as MCV only after a need for transportation becomes apparent or because they are exhibiting warning signs of homelessness such as changes in cleanliness and inadequate clothing, excessive eating and/or hoarding food, and tardiness and absenteeism. Therefore, the students represented in this research are most likely an underrepresentation of the students in the district who are actually experiencing homelessness and may be a reflection of the students experiencing homelessness in the district with the most acute needs. However, this research sets the framework for better understanding the distinct needs of students experiencing homelessness and the research design and methods for this study could be duplicated in future research.

CHAPTER 4: RESULTS

Sample

For the overall sample of students experiencing homelessness, student's ages ranged from 2 – 21 years, with an average age of 10.09 years ($SD=3.97$). As shown in Table 1, half (50.83%, $n=5,975$) of the students were female, and nearly half (49.17%, $n=5,779$) were male. The majority of students were in kindergarten (13.21%, $n=1,553$), followed by 1st grade (9.40%, $n=1,105$), 2nd grade (9.11%, $n=1,071$), and 3rd grade (8.89%, $n=1,045$). The vast majority of students were African-American (78.72%, $n=9,253$), followed by Hispanic (10.26%, $n=1,206$), White (6.76%, $n=795$), Multi-racial (2.99%, $n=352$), Asian (0.68%, $n=80$), American Indian (0.51%, $n=60$), and Pacific Islander (0.07%, $n=8$). The majority of students for all housing type categories were not on a 504 plan¹, were not designated as Limited English Proficient (LEP) status, and were not designated as Exceptional Child (EC) status². Additionally, the majority of students for all housing types had never been retained a grade level.

Chi-square analyses demonstrated that there was an association between housing type and race ($df=18$, $X^2=115.31$, $p<.001$), indicating African American students were

¹ Section 504 eligible covers qualified students with disabilities who are determined to: (1) have a physical or mental impairment that substantially limits one or more major life activities; or (2) have a record of such an impairment; or (3) be regarded as having such an impairment (U.S. Department of Education, 2015).

² Exceptional Child (EC) status includes students who experience difficulties in learning as well as those whose performance is so superior that modifications in curriculum and instruction are necessary to help them fulfill their potential (i.e., academically/intellectually gifted). Thus, 'EC' is an exclusive term that refers to children with learning and/or behavioral problems, children with physical disabilities or sensory impairments, and children who are intellectually gifted or have a special talent (Heward, 2009). For the purposes of these analyses, gifted students were excluded.

over-represented in all housing type categories. However, there was no association between housing type and gender ($df=3$, $X^2=0.52$, $p=.91$). One-way ANOVA showed that the effect of housing type group on age was significant, $F(2, 10327)=26.42$, $p<.001$). Post hoc analysis revealed significant mean differences in age between students living as literally homeless ($M=11.25$, $SD=3.72$), students living in a shelter ($M=9.36$, $SD=3.62$), students living in a motel ($M=9.71$, $SD=3.72$), and students living doubled up ($M=10.10$, $SD=3.96$), indicating that students living as literally homeless are significantly older when compared to each of the other three housing types. Additionally, one-way ANOVA showed that the effect of housing type on total days homeless for the year was significant, $F(3, 11841)=22.72$, $p<.001$. Post hoc analysis revealed significant mean differences in total days homeless for the year between students living doubled up ($M=215.68$, $SD=113.89$), students living in a shelter ($M=190.24$, $SD=118.40$), and students living in a motel ($M=192.10$; $SD=118.67$), indicating that students living doubled up with friends or family are experiencing significantly more days as homeless compared to students living in a shelter or students living in a motel. (See Table 3 for a detailed summary of demographic characteristics.)

Table 3: Demographic characteristics by students' housing type at first homeless occurrence

		Overall (N=11,842)	Shelter (n=685)	Doubled up (n=9,424)	Literally homeless (n=716)	Motel (n=1,017)
Dependent Variable		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean(SD)
Age		10.09 (SD=3.97)	9.36 (SD=3.62)	10.10 (SD=3.96)	11.25 (SD=4.56)	9.71 (SD=3.72)
Days homeless for the year		211.51 (SD=114.78)	190.24 (SD=118.40)	215.68 (SD=113.89)	204.43 (SD=112.10)	192.10 (SD=118.67)
Dependent Variable Name	Dependent Variable Category	# (%)	# (%)	# (%)	# (%)	# (%)

Gender	Female	5,975 (50.83%)	347 (51.33%)	4,749 (50.69%)	368 (51.98%)	511 (51.00%)
	Male	5,779 (49.17%)	329 (48.67%)	4,619 (49.31%)	340 (48.02%)	491 (49.00%)
Grade level	Pre-kindergarten	250 (2.13%)	14 (2.08%)	191 (2.03%)	23 (3.25%)	22 (2.20%)
	Kindergarten	1,553 (13.21%)	111 (16.42%)	1,236 (13.19%)	70 (9.89%)	136 (13.57%)
	1 st grade	1,105 (9.40%)	69 (10.21%)	887 (9.47%)	48 (6.78%)	101 (10.08%)
	2 nd grade	1,071 (9.11%)	87 (12.87%)	841 (8.98%)	53 (7.49%)	90 (8.98%)
	3 rd grade	1,045 (8.89%)	68 (10.06%)	852 (9.09%)	39 (5.51%)	86 (8.58%)
	4 th grade	937 (7.97%)	71 (10.50%)	717 (7.65%)	46 (6.50%)	103 (10.28%)
	5 th grade	874 (7.44%)	53 (7.84%)	696 (7.43%)	44 (6.21%)	81 (8.08%)
	6 th grade	828 (7.04%)	43 (6.36%)	666 (7.11%)	37 (5.23%)	82 (8.18%)
	7 th grade	791 (6.73%)	38 (5.62%)	639 (6.82%)	34 (4.80%)	80 (7.98%)
	8 th grade	773 (6.58%)	34 (5.03%)	640 (6.83%)	33 (4.66%)	66 (6.59%)
	9 th grade	974 (8.29%)	45 (6.66%)	779 (8.32%)	89 (12.57%)	61 (6.09%)
	10 th grade	615 (5.23%)	25 (3.70%)	481 (5.13%)	72 (10.17%)	37 (3.69%)
	11 th grade	446 (3.79%)	11 (1.63%)	344 (3.67%)	60 (8.47%)	31 (3.09%)
	12 th grade	492 (4.19%)	7 (1.04%)	399 (4.26%)	60 (8.47%)	26 (2.59%)
Race	African American	9,253 (78.72%)	551 (81.51%)	7,327 (78.21%)	547 (82.63%)	828 (78.72%)
	Hispanic	1,206 (10.26%)	42 (6.21%)	1,069 (11.41%)	64 (9.04%)	31 (3.09%)
	White	795 (6.76%)	45 (6.66%)	598 (6.38%)	57 (8.05%)	95 (9.48%)
	Multi-racial	352 (2.99%)	29 (4.29%)	255 (2.72%)	26 (3.67%)	42 (4.19%)
	Asian	80 (0.68%)	5 (0.74%)	68 (0.73%)	5 (0.71%)	2 (0.20%)
	American Indian	60 (0.51%)	4 (0.59%)	44 (0.47%)	8 (1.13%)	4 (0.40%)
	Pacific Islander	8 (0.07%)	0 (0.00%)	7 (0.07%)	1 (0.14%)	0 (0.00%)
504 plan	No	11,461 (97.51%)	662 (97.93%)	9,123 (97.38%)	691 (97.60%)	985 (98.30%)
	Yes	293 (2.49%)	14 (2.07%)	245 (2.62%)	17 (2.40%)	17 (1.70%)
Limited English Proficient (LEP) Status	No	10,857 (92.37%)	649 (96.01%)	8,551 (91.28%)	662 (93.50%)	995 (99.30%)
	Yes	897 (7.63%)	27 (3.99%)	817 (8.72%)	46 (6.50%)	7 (0.70%)

Exceptional Child (EC) Status	No	10,084 (85.79%)	581 (85.95%)	8,048 (85.91%)	597 (84.32%)	858 (85.63%)
	Yes	1,670 (14.21%)	95 (14.05%)	1,320 (14.09%)	111 (15.68%)	144 (14.37%)
Retained	No	5,510 (80.72%)	232 (80.56%)	4,491 (80.53%)	380 (83.52%)	407 (80.43%)
	Yes	1,316 (19.28%)	56 (19.44%)	1,086 (19.47%)	75 (16.48%)	99 (19.57%)

Analysis

One-way ANOVA were used to measure the effect of the independent variable, student's housing type, on multiple dependent variables related to students' academic performance, attendance, behavior, and healthcare utilization patterns. As previously noted, because multiple comparisons are being examined, Tukey's HSD tests were performed for post hoc analysis to identify which groups were statistically significant from each other.

Academic Performance

End-of-Grade (EOG) reading and math z-scores were examined first. EOG reading and math standardized assessments are administered to CMS students in grades 3 through 8 at the end of each school year. For this set of analyses, one-way ANOVA were performed to show the effect of housing type on EOG reading and math z-scores. For students with an EOG reading z-score, one-way ANOVA showed no effect of housing type on EOG reading z-scores, $F(3, 3917)=.22, p=.88$. Next, EOG math z-scores were examined to identify mean differences between housing type groups. One-way ANOVA showed no effect of housing type on EOG math z-scores, $F(3, 4244)=.32, p=.81$.

Next, End-of-Course (EOC) English I and Algebra I z-scores were examined. EOC standardized assessments are administered primarily to students at the high school

level, though EOC Algebra I assessments are also administered to middle school students, depending on their academic course pathway. One-way ANOVA showed no effect of housing type on EOC English I z-scores, $F(3, 472)=.48$, $p=.69$. Similarly, there was no effect of housing type on Algebra I z-scores, $F(3, 482)=1.99$, $p=.11$. (See Table 4 for detailed results of academic performance outcomes.)

Table 4: Academic performance outcomes by housing type

Dependent Variable	Group 1: Shelter		Group 2: Doubled up		Group 3: Homeless		Group 4: Motel		$F(3)$	p	η^2
	M	SD	M	SD	M	SD	M	SD			
EOG Reading	-.46	.90	-.50	.86	-.47	.86	-.49	.91	.22	.88	.0002
EOG Math	-.65	.82	-.60	.77	-.63	.71	-.60	.81	.32	.81	.0002
EOC English I	-.65	.95	-.44	.78	-.41	.67	-.42	.65	.48	.69	.0030
EOC Algebra I	-.90	.70	-.50	.79	-.44	.72	-.58	.81	1.99	.11	.0123

School Attendance

The effect of housing type on total absences, unexcused absences, and percent days attended were examined next. One-way ANOVA showed that the effect of housing type on total absences was significant, $F(3, 11771)=8.15$, $p<.001$. Post hoc analysis revealed significant mean differences in total absences between students living as literally homeless ($M=16.96$, $SD=17.90$), students living in a shelter ($M=13.26$, $SD=13.87$), students living in a motel ($M=15.38$, $SD=15.23$) and students living doubled up ($M=14.76$, $SD=14.40$), indicating that students living as literally homeless are missing significantly more days of school when compared to students living doubled up and students living in a shelter, while students living in a motel are missing significantly more days of school when compared to students living in a shelter and students living doubled

up with family or friends. There was not a significant mean difference between students living as literally homeless and students living in a motel. One-way ANOVA showed that the effect of housing type on total unexcused absences was significant, $F(3, 11771)=6.25, p=0.0003$. Post-hoc analyses revealed a significant mean difference in students living as literally homeless ($M=11.50, SD=13.62$), students living in a shelter ($M=9.46, SD=12.00$), and students living doubled up ($M=9.68, SD=11.19$), indicating that students living as literally homeless are experiencing significantly higher unexcused absences when compared to students living doubled up and students living in a shelter.

Next, the percentage of days attended was examined to compare mean differences between housing type groups. The dependent variable, percent days attended, was calculated by dividing total number of days present by the total number of days enrolled for the given school year. One-way ANOVA showed that the effect of housing type on percentage of days attended was significant, $F(3, 11769)=12.17, p<.0001$. Post-hoc analyses revealed statistically significant mean differences in students living as literally homeless ($M=89.11, SD=11.57$), students living doubled up ($M=90.80, SD=9.39$), and students living in a motel ($M=89.44, SD=10.45$), indicating that students living as literally homeless and students living in a motel are missing significantly more school days when compared to students living doubled up. There was not a significant mean difference in percentage of days attended between students living as literally homeless and students living in a motel. (See Table 5 for detailed results of student attendance outcomes. Figures 1 through 3 show the distributions of attendance dependent variables by housing type where the effect of housing type was significant.)

Table 5. Student attendance outcomes by housing type

Dependent Variable	Group 1: Shelter (n=685)		Group 2: Doubled up (n=9,424)		Group 3: Homeless (n=716)		Group 4: Motel (n=1,017)		F(3)	p	n ²	Tukey's HSD
	M	SD	M	SD	M	SD	M	SD				
Total Absences	13.26	13.87	14.76	14.40	16.96	17.90	15.38	15.23	8.15	<.001**	.002	1,2<3,4
Total Unexcused Absences	9.46	12.00	9.68	11.19	11.50	13.62	10.25	11.89	6.25	.0003*	.002	1,2<3
Percent days attended	90.04	11.58	90.80	9.39	89.11	11.57	89.44	10.45	12.17	<.001**	.003	2>3,4

* $p < .001$, ** $p < .0001$.

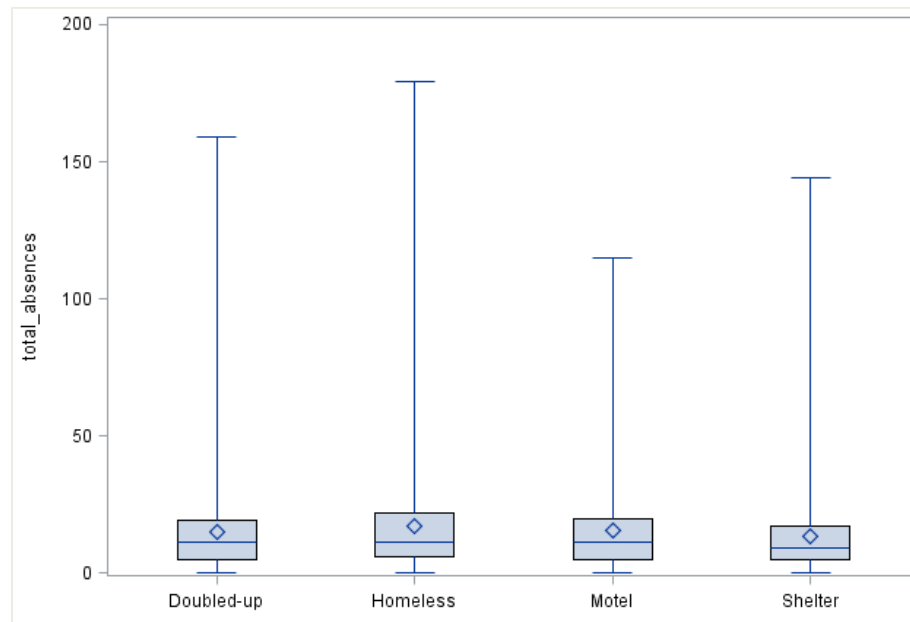


Figure 1: Distribution of total absences by housing type

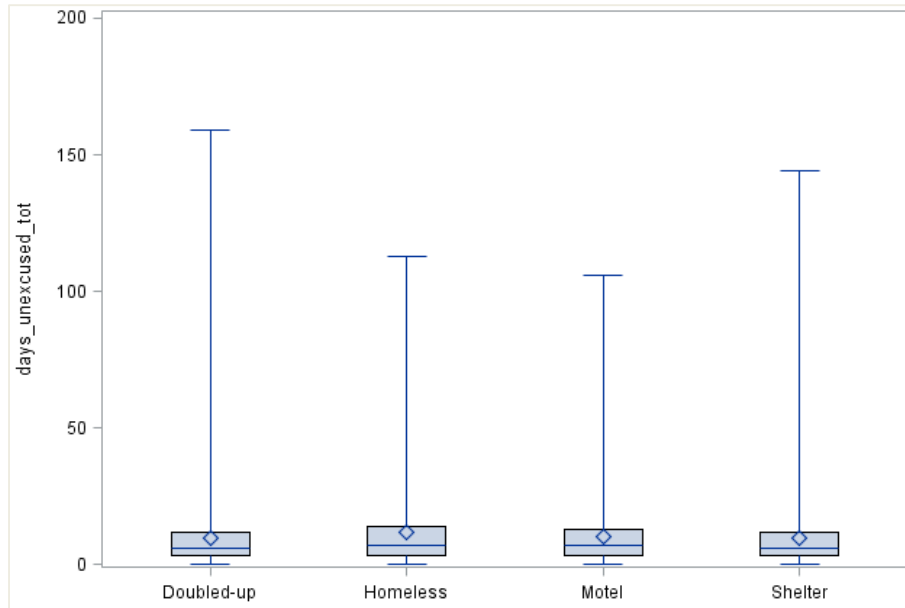


Figure 2. Distribution of total unexcused absences by housing type

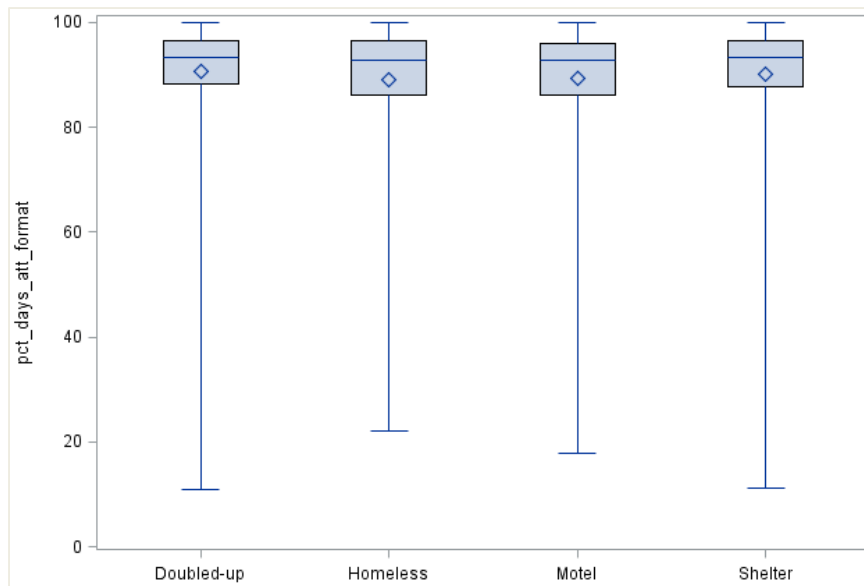


Figure 3. Distribution of percentage of days attended by housing type

Behavior

In-school suspensions (ISS), out-of-school suspensions (OSS), total incidents, total incidents that resulted in ISS, and total incidents that resulted in OSS were examined to test for the effect of housing type on students' behavior. Note that how ISS and OSS days are assigned can be subjective across school levels and schools; therefore, these sets of analyses were first examined with inclusion of all students for whom behavior data were available and were then subset and examined at each school level (i.e., elementary, middle, and high school).

One-way ANOVA showed that the effect of housing type on total days ISS was significant, $F(3, 11771)=4.49, p=.004$. Post hoc analysis revealed statistically significant mean differences in total ISS days for students living as literally homeless ($M=0.62, SD=1.78$), students living in a shelter ($M=0.19, SD=0.88$), and students living in a motel ($M=0.30, SD=1.39$), indicating that students living as literally homeless are receiving more ISS day assignments when compared to students living in a shelter and students living in a motel. Next, data were subset by school level. One-way ANOVA showed no effect of housing type on total ISS days for elementary school students, $F(3, 6584)=1.85, p=.14$, middle school students, $F(3, 2391)=1.29, p=.28$, or high school students, $F(3, 2516)=1.41, p=.24$. For total OSS days, one-way ANOVA showed that the effect of housing type on total OSS days was significant, $F(3, 11771)=3.48, p=.02$. Post hoc analyses revealed significant mean differences in total OSS days for students living as literally homeless ($M=1.95, SD=6.08$), students living doubled up ($M=1.81, SD=5.58$), and students living in a shelter ($M=1.14, SD=3.97$), indicating that students living as literally homeless and students living doubled up are receiving significantly more OSS

days assignments when compared to students living in a shelter. After data were subset by school level, one-way ANOVA showed no effect of housing type on total OSS days for elementary school students, $F(3, 6584)=1.01, p=.39$, middle school students, $F(3, 2391)=0.69, p=.56$, or high school students, $F(3, 2516)=0.91, p=.43$. (See Table 6 for a detailed summary of total ISS and total OSS assignments by housing type. Figures 4 and 5 show the distributions of behavior dependent variables by housing type where the effect of housing type was significant.)

Table 6: Student behavior outcomes: Total ISS and OSS days assignments by housing type

Dependent Variable	Group 1: Shelter (n=685)		Group 2: Doubled up (n=9,424)		Group 3: Homeless (n=716)		Group 4: Motel (n=1,017)		$F(3)$	p	n^2	Tukey's HSD
	M	SD	M	SD	M	SD	M	SD				
Total ISS days	.19	.88	.44	2.65	.62	1.78	.30	1.39	4.49	.004**	.001	1,4<3
Total ISS days- Elementary school	.01	.14	.03	.37	.07	0.45	.05	.57	1.85	.14	.0001	ns
Total ISS days- Middle school	.63	1.63	1.27	5.24	1.58	2.86	0.84	2.44	1.29	.28	.002	ns
Total ISS days- High school	.55	1.39	.72	2.17	.90	2.01	.52	1.35	1.41	.24	.002	ns
Total OSS days	1.14	3.97	1.81	5.58	1.95	6.08	1.66	5.73	3.48	.02*	.0001	1<3,2
Total OSS days- Elementary school	.39	1.47	.45	1.94	.29	1.09	.51	2.60	1.01	.39	.0004	ns
Total OSS days- Middle school	3.06	7.56	3.82	8.00	3.10	7.19	4.09	8.59	0.69	.56	.001	ns
Total OSS days- High school	2.60	4.98	3.58	7.88	3.49	8.22	2.76	8.00	.91	.43	.001	ns

* $p<.05$, ** $p<.001$, ns =non-significant.

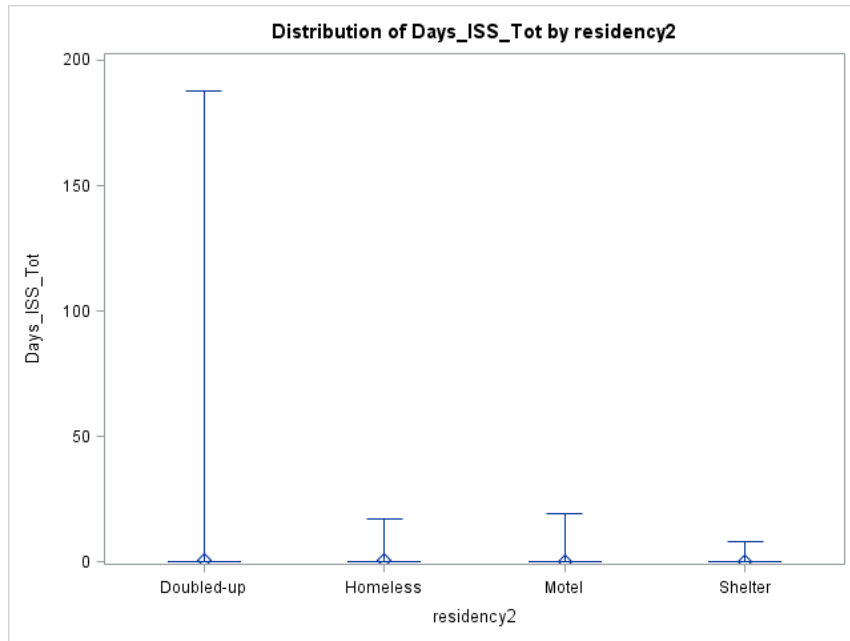


Figure 4. Distribution of total days assigned ISS by housing type

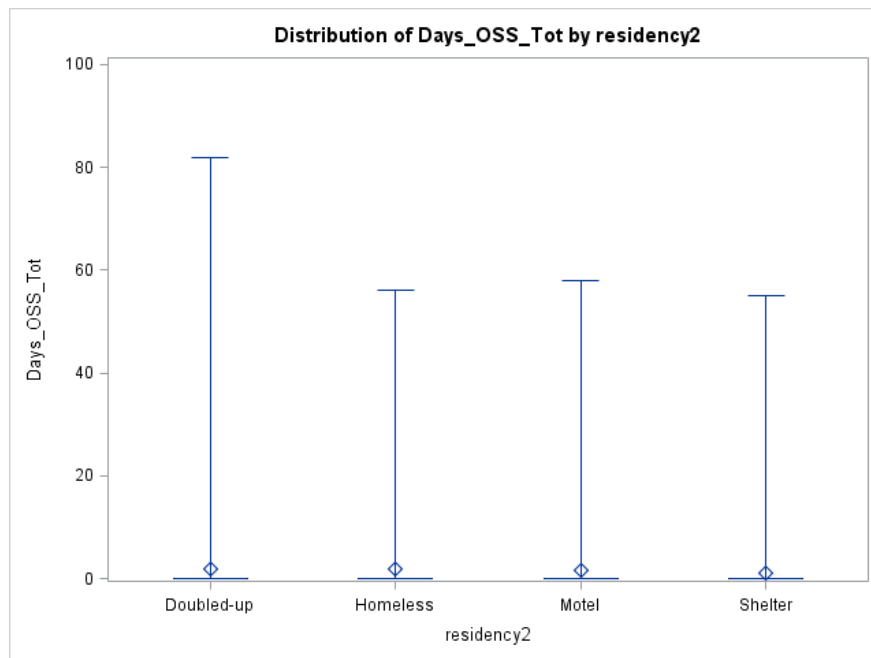


Figure 5. Distribution of total OSS days assignments by housing type

Next, total incidents were examined. Total incidents indicate that a student was involved in a behavioral incident while on school property. Examples of a behavioral incident may include fighting, bullying, or disrespectful language toward an adult. One-way ANOVA showed no effect of housing type on total incidents, $F(3, 11194)=1.33$, $p=.26$. After data were subset by school level, one-way ANOVA showed no effect of housing type on total incidents for elementary school students, $F(3, 6353)=0.20$, $p=.90$, middle school students, $F(3, 2312)=1.83$, $p=.14$, or high school students, $F(3, 2231)=1.31$, $p=.27$. Next, total incidents that resulted in ISS were examined. (It is important to distinguish that total incidents that resulted in ISS is not the same as total ISS days. For example, if a student was involved in an incident that resulted in ISS, then that student is involved in one incident that resulted in at least one day of assigned ISS. For example, if the student was assigned 5 days of ISS as a consequence of the incident. That student would have a value of '5' for their total ISS days.) For total incidents that resulted in ISS, one-way ANOVA showed no effect of housing type, $F(3, 11194)=2.13$, $p=.09$. After data were subset by school level, one-way ANOVA showed no effect of housing type on total incidents that resulted in ISS for elementary school students, $F(3, 6353)=0.52$, $p=.70$, middle school students, $F(3, 2312)=2.05$, $p=.10$, or high school students, $F(3, 2231)=0.38$, $p=.77$.

Next, total incidents that resulted in OSS were examined. (As previously described above, it is important to distinguish that total incidents that resulted in OSS is not the same as total OSS days. The same logic described above that distinguishes total incidents that resulted in ISS and total ISS days can be applied here for total incidents that resulted in OSS and OSS days.) One-way ANOVA showed no effect of housing type

on total incidents that resulted in OSS, $F(3, 11194)=0.72$, $p=.54$. Again, after data were subset by school level, one-way ANOVA showed no effect of housing type on total incidents that resulted in OSS for elementary school students, $F(3, 6353)=0.05$, $p=.98$, middle school students, $F(3, 2312)=1.34$, $p=.26$, or high school students, $F(3, 2231)=1.62$, $p=.18$. (See Table 7 for a detailed summary of student behavior outcomes for total incidents, total incidents that resulted in ISS, and total incidents that resulted in OSS.)

Table 7: Student behavior outcomes: Total incidents, total ISS incidents, and total OSS incidents by housing type group

Dependent Variable	Group 1: Shelter (n=685)		Group 2: Doubled up (n=9,424)		Group 3: Homeless (n=716)		Group 4: Motel (n=1,017)		$F(3)$	p	n^2
	M	SD	M	SD	M	SD	M	SD			
Total incidents	4.80	13.80	5.57	14.21	5.93	14.76	4.91	15.41	1.33	.26	.0004
Total incidents-Elementary school	3.73	11.92	4.05	12.96	4.29	12.40	3.76	15.86	.20	.90	.0000
Total incidents-Middle school	9.15	21.36	9.75	18.59	13.84	26.58	8.62	18.19	1.83	.14	.0022
Total incidents-High school	5.09	9.28	6.01	11.83	5.06	9.07	4.51	7.84	1.31	.27	.0002
Total incidents ISS	1.49	4.72	1.86	5.63	2.08	5.43	1.56	5.75	2.13	.09	.0001
Total incidents ISS-Elementary school	1.06	4.18	1.27	5.34	1.39	4.60	1.06	5.69	.52	.67	.0002
Total incidents ISS-Middle school	3.08	6.79	3.48	7.09	4.99	9.39	2.91	7.15	2.05	.10	.0030
Total incidents ISS - High school	1.79	3.90	2.05	4.56	1.93	3.82	1.72	3.38	.38	.77	.0011
Total incidents OSS	3.32	10.25	3.71	9.82	3.85	10.61	3.35	10.52	.72	.54	.0002
Total incidents OSS-Elementary school	2.67	8.58	2.78	8.76	2.89	8.66	2.70	10.68	.05	.98	.0000
Total incidents OSS-Middle school	6.07	16.63	6.27	13.08	8.85	19.57	5.70	12.63	1.34	.26	.0021

Dependent Variable	Group 1: Shelter (n=685)		Group 2: Doubled up (n=9,424)		Group 3: Homeless (n=716)		Group 4: Motel (n=1,017)		F(3)	p	n ²
	M	SD	M	SD	M	SD	M	SD			
Total incidents OSS - High school	3.31	6.64	3.95	8.56	3.13	6.36	2.80	5.55	1.62	.18	.0022

Healthcare Utilization

The first set of analyses examined the type of healthcare encounters experienced by the student. Examples of healthcare encounters include, but are not limited to, outpatient visit to multiple departments, inpatient hospital stay, emergency room visit, or office visit. CHS included a variable in the dataset, 'Encounter_type,' that allowed for the aggregation of total healthcare encounters by year and disaggregation of encounter type (i.e., ambulatory, emergency, outpatient, or inpatient) by year. The variable, 'Homeless_indicator,' was used to confirm the healthcare encounters were only aggregated and disaggregated when the student was confirmed to be experiencing homelessness at the time of the healthcare encounter. For the purposes of this research study, the dependent variable, total healthcare encounters, is defined as the total number of healthcare encounters the student experienced for the year where it was confirmed the student was homeless at the time of the healthcare encounter. One-way ANOVA tests showed that the effect of housing type on total healthcare encounters was significant, $F(3, 4866)=6.54, p=.0002$. Post hoc analyses revealed a significant mean difference between students living doubled up ($M=9.78, SD=16.68$), students living as literally homeless ($M=13.53, SD=33.52$), students living in a shelter ($M=9.39, SD=11.98$), and students living in a motel ($M=7.68, SD=9.39$), indicating that students living as literally homeless

are experiencing significantly more healthcare encounters when compared to each of the three other housing type groups.

Next, healthcare encounters were disaggregated by healthcare encounter type to calculate a total number of healthcare encounters by encounter type for the year. First, total ambulatory encounters were examined. The dependent variable, total ambulatory encounters, are defined as the total number of ambulatory healthcare encounters the student experienced for the year where it was also confirmed the student was homeless at the time of the ambulatory healthcare encounter. CHS defines ambulatory encounters as visits that occur only in non-hospital service areas such as a physician practice. One-way ANOVA showed that the effect of housing type on total ambulatory healthcare encounters was significant, $F(3, 4866)=6.89, p=.0001$. Again, post hoc analysis revealed a significant mean difference between students living as literally homeless ($M=6.95, SD=20.96$), students living doubled up ($M=4.77, SD=9.20$), students living in a motel ($M=3.63, SD=6.16$), and students living in a shelter ($M=4.00, SD= 9.29$), indicating that students living as literally homeless are experiencing significantly more ambulatory healthcare encounters when compared to each of the three other housing type groups.

Next, total emergency healthcare encounters were examined. The dependent variable, total emergency healthcare encounters, is defined as the total number of emergency healthcare encounters the student experienced for the year where it was also confirmed the student was homeless at the time of the emergency healthcare encounter. One-way ANOVA showed that the effect of housing type on total emergency healthcare encounters was significant, $F(3, 4866)=4.88, p=.002$. Again, post hoc analysis revealed a significant mean difference between students living as literally homeless ($M=5.61,$

$SD=11.24$), students living doubled up ($M=3.94$, $SD=7.32$), students living in a motel ($M=4.05$, $SD=7.26$), and students living in a shelter ($M=3.98$, $SD=6.42$), indicating that students living as literally homeless are experiencing significantly more emergency healthcare encounters when compared to each of the three other housing type groups.

Total outpatient healthcare encounters were examined next. CHS defines outpatient encounters as visits that occur only in hospital-based areas such as clinics, laboratories, radiology, nursing units, transfusion centers, urgent cares, and surgical centers. Outpatient encounters do not result in an overnight stay. Similarly, the dependent variable, total outpatient healthcare encounters, is defined as the total number of outpatient healthcare encounters the student experienced for the year where it was also confirmed the student was homeless at the time of the outpatient healthcare encounter. One-way ANOVA showed that the effect of housing type on total outpatient healthcare encounters was significant, $F(3, 4866)=2.93$, $p=.03$. Post hoc analysis revealed a significant mean difference between students living as literally homeless ($M=9.90$, $SD=21.83$) and students living in a motel ($M=6.25$, $SD=11.56$), indicating students living as literally homeless are experiencing significantly more outpatient healthcare encounters when compared to students living in a motel.

Next, total inpatient healthcare encounters were examined. The dependent variable, total inpatient healthcare encounters, is defined as the total number of inpatient healthcare encounters the student experienced for the year where it was also confirmed the student was homeless at the time of the inpatient healthcare encounter. One-way ANOVA showed that the effect of housing type on total inpatient healthcare encounters was significant, $F(3, 4866)=6.33$, $p=.0003$. Again, post hoc analysis revealed a

significant mean difference between students living as literally homeless ($M=4.68$, $SD=30.21$), students living doubled up ($M=1.73$, $SD=10.55$), students living in a motel ($M=1.04$, $SD=6.14$), and students living in a shelter ($M=1.37$, $SD=5.90$), indicating that students living as literally homeless are experiencing significantly more inpatient healthcare encounters when compared to each of the three other housing type groups (See Table 8 for a detailed summary of results for healthcare encounters outcomes. Figures 6 through 10 show the distributions of healthcare encounter dependent variables by housing type).

Table 8: Student healthcare utilization outcomes: Total overall healthcare encounters and disaggregated healthcare encounters by housing type

Dependent Variable	Group 1: Shelter (n=280)		Group 2: Doubled up (n=3,908)		Group 3: Homeless (n=324)		Group 4: Motel (n=355)		$F(3, 4866)$	p	n^2	Tukey's HSD
	M	SD	M	SD	M	SD	M	SD				
Total healthcare encounters	9.39	11.98	9.78	16.68	13.53	33.52	7.68	9.34	6.54	.0002**	.0004	1,2,4<3
Total ambulatory encounters	3.99	9.29	4.77	9.20	6.95	20.96	3.63	6.16	6.89	.0001**	.004	1,2,4<3
Total emergency encounters	3.98	6.42	3.94	7.32	5.61	11.24	4.05	7.26	4.88	.002**	.003	1,2,4<3
Total inpatient encounters	1.37	5.90	1.73	10.55	4.68	30.21	1.04	6.14	6.33	.0003**	.004	1,2,4<3
Total outpatient encounters	8.18	13.30	7.65	16.55	9.90	21.83	6.25	11.56	2.93	.03*	.002	4<3

* $p<.05$, ** $p<.001$.

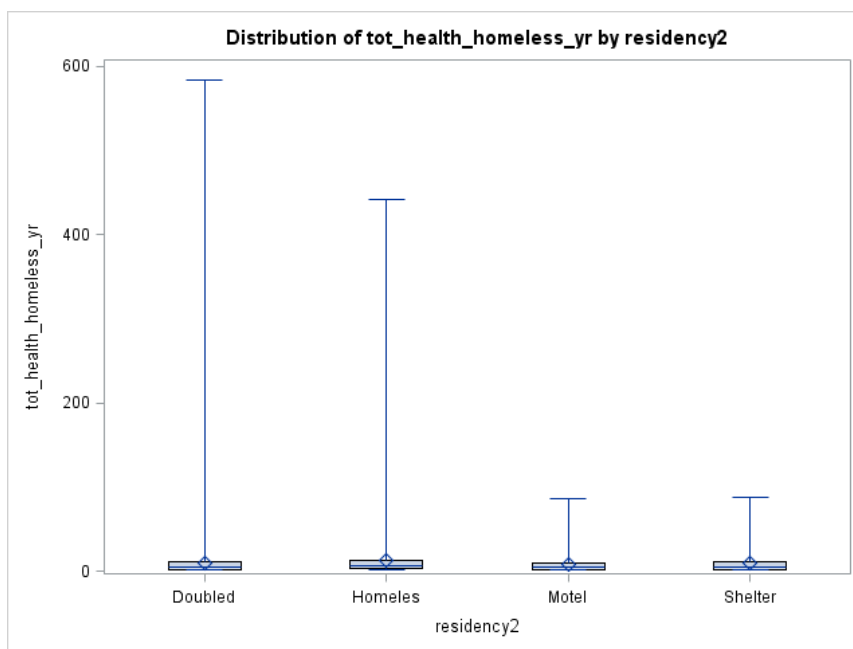


Figure 6: Distribution of total healthcare encounters by housing type

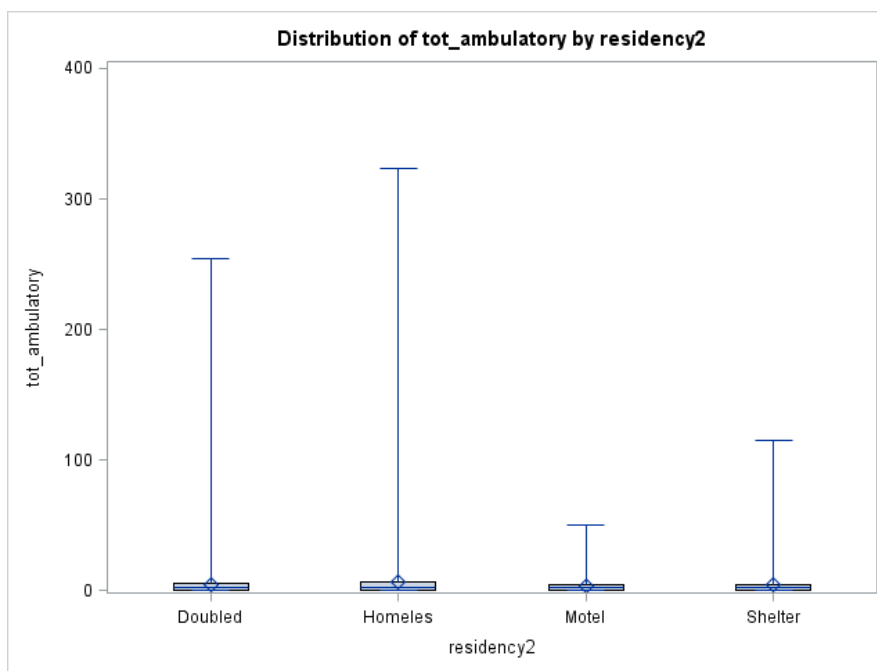


Figure 7: Distribution of total ambulatory encounters by housing type

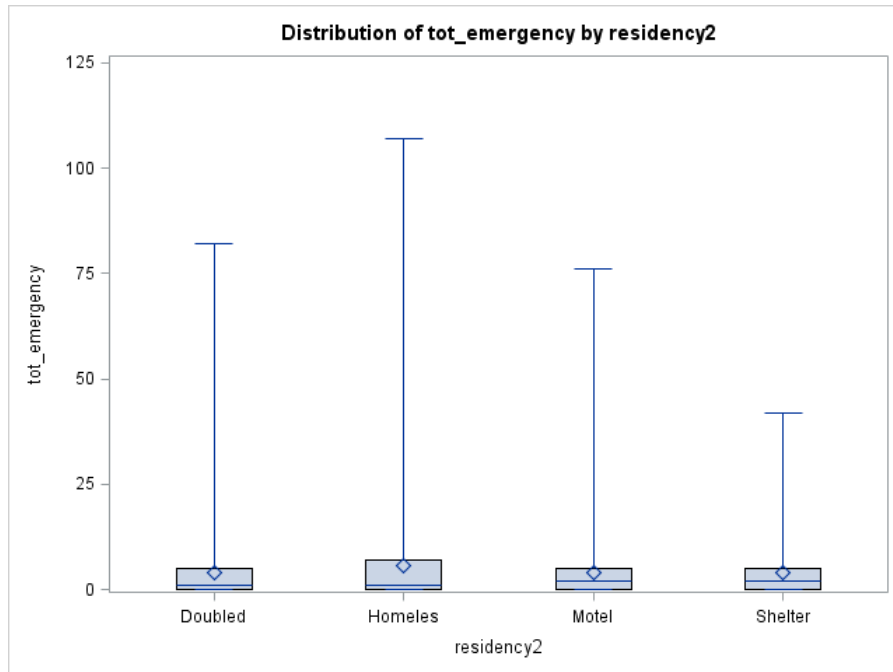


Figure 8: Distribution of total emergency encounters by housing type

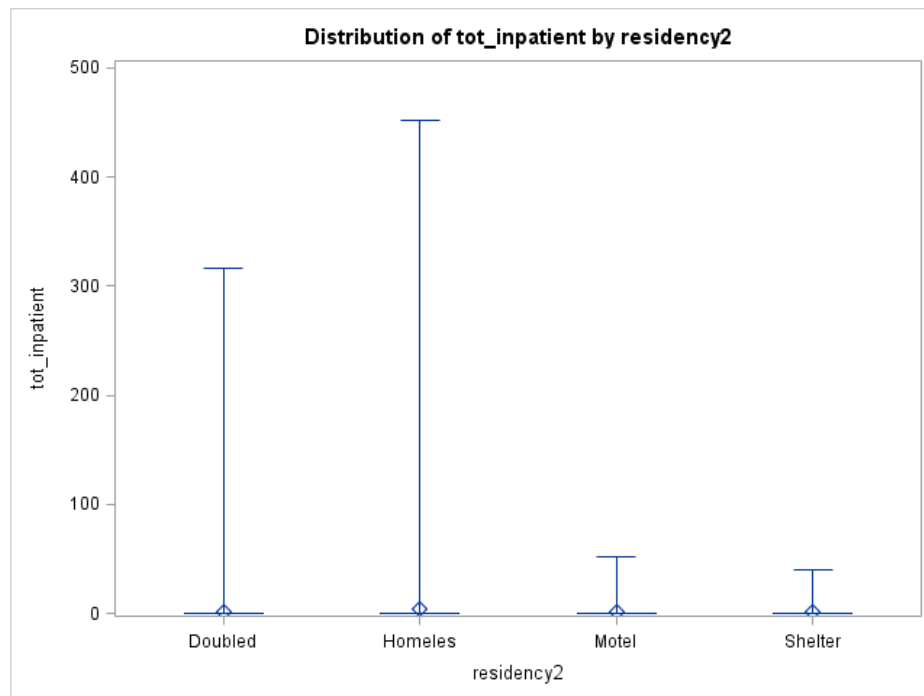


Figure 9: Distribution of total inpatient encounters by housing type

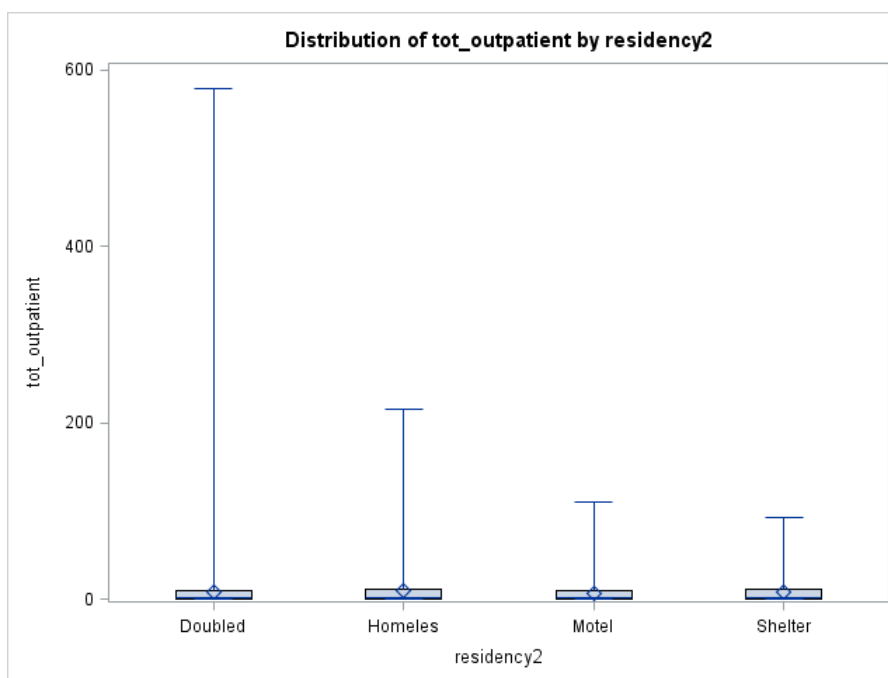


Figure 10: Distribution of total outpatient encounters by housing type

The next set of analyses examined whether the student was admitted to the emergency department (ED) with an Ambulatory Care Sensitive (ACS) condition or if the student was admitted to the ED with an emergent condition that was not preventable/avoidable. Some examples of ACS conditions may include asthma, dehydration, or severe ear, nose, and throat (ENT) infections. For this research, ACS conditions were identified using the New York University ED algorithm (NYU algorithm). The algorithm was developed and validated with industry experts and researchers at NYU (Billings, Parkikh, & Mijanovich, 2000). To assess whether an observation is classified as an ACS condition, the algorithm creates the following four variables using ICD9 primary diagnosis codes: 1) non-emergent; 2) emergent/primary care treatable; 3) emergent ED care needed preventable/avoidable; or 4) emergent ED care needed not preventable/avoidable (Billings et al., 2000) (See Figure 11). Instead of

determining whether each observation is an ACS condition, the algorithm provides the relative probability that an observation would be diagnosed for each category, with the sum of the probabilities of each observation equal to one. For example, each diagnosis of a urinary tract infection (ICD-9-CM code 599) is assigned a 66% probability of being “nonemergent”, a 17% probability of being “emergent/primary care treatable”; a 17% being probability of “emergent/ED care needed but preventable”; and 0% probability of “emergent not preventable” (The Center for Health and Public Service Research, n.d.).

Consistent with prior research, an ED visit is considered an ACS condition if the combined probabilities of “non-emergent”, “emergent/primary care treatable” and “emergent/ED care needed but preventable” for the visit are equal to or exceeds 75% (Hwang et al., 2012). For this research, these three categories were added together to produce a derived variable called “ACS condition” with a value of ‘1’ if the three categories calculated to 75% or higher. Another derived variable was created called “Emergent condition” if the ACS condition value was not equal to 1 and the “emergent not preventable” value was greater than 0. Both of these derived variables were each aggregated by student and year to obtain two dependent variables, (1) total number of ACS conditions and (2) total number of emergent conditions. (Figure 11 shows a description of each visit classification using the NYU algorithm.)

<u>Visit Classification</u>	<u>Description</u>
Non-emergent	Immediate medical care was not required within 12 hours.
Emergent/primary care treatable	Treatment was required within 12 hours, but care could have been provided effectively and safely in an ambulatory setting.
Emergent/ED care needed, preventable	ED care was required, but the condition was potentially preventable if timely and effective primary care was received.
Emergent/ED care needed, not preventable	ED care was required and ambulatory care treatment could not have prevented the condition.

Figure 11: NYU algorithm – visit classifications

Source: Billings, J., Parkikh, N., & Mijanovich, T. (2000). Emergency room use: The New York story Issue Brief (2000 Nov ed., pp.1-12): Commonwealth Fund.

The NYU algorithm does not assign emergent care probabilities to admissions for an injury, mental health, drug or alcohol related admissions, but separately identifies these occurrences. For this research, admissions for injury and mental health were aggregated by student and year to derive two dependent variables, (1) total injury admissions and (2) total mental health admissions. There were no cases of drug or alcohol related admissions for any of the students included in this research. Admissions for ICD-9 codes not included in the NYU algorithm are identified as unclassified. Changes in ICD-9 codes since the development of the NYU algorithm may have

increased the number of unclassified admissions (Billings et al., 2000). It should be noted that for this research, unclassified admissions were not examined.

One-way ANOVA showed no effect of housing type on total ACS ED admissions, $F(3, 408)=0.99$, $p=.40$ or total injury admissions, $F(3, 1391)=0.84$, $p=.47$. (It should be note that for total emergent ED admissions, the sample size was insufficient ($n=2$) to conduct meaningful analysis.) However, one-way ANOVA showed that the effect of housing type on total mental health admissions was significant, $F(3, 1391)=6.51$, $p=.0002$. Post hoc analyses revealed significant mean differences between students living in a shelter ($M=2.45$, $SD=9.93$), students living in a motel ($M=0.16$, $SD=0.72$), and students living doubled up with friends or family ($M=0.62$, $SD=3.35$), indicating that students living in a shelter are experiencing significantly more mental health admissions when compared to students living in a motel and students living doubled up. (See Table 9 for a detailed summary of results for visit classifications using the NYU algorithm. Figure 12 shows the distribution of total mental health admissions by housing type.)

Table 9: Student healthcare utilization outcomes: Total ACS ED, injury, and mental health admissions by housing type category

Dependent Variable	Group 1: Shelter		Group 2: Doubled up		Group 3: Homeless		Group 4: Motel		<i>F</i>	<i>p</i>	<i>n</i> ²	Tukey's HSD
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Total ACS ED admissions	6.32	4.19	5.75	5.22	7.50	7.89	6.36	4.53	0.99	.40	.0073	ns
Total injury admissions	1.33	3.50	2.12	5.14	2.47	4.22	2.31	4.76	.84	.47	.0018	ns
Total mental health admissions	2.45	9.93	0.62	3.35	1.40	5.30	0.16	0.72	6.51	.0002*	.0139	1>2,4

* $p<.001$, *ns*=non-significant.

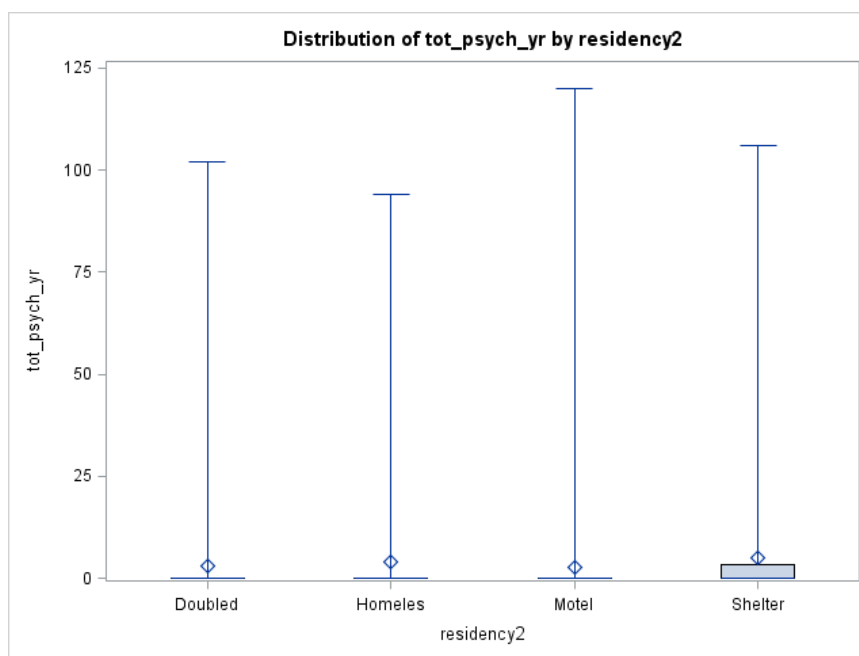


Figure 12: Distribution of total mental health admissions by housing type

For this next set of analyses, primary health insurance type was first compared between groups to examine whether there was an effect of housing type on primary health insurance. Primary health insurance type was disaggregated to calculate the total number of times each primary health insurance type was used for a healthcare encounter for the year. For example, if the primary health insurance type for a healthcare encounter was identified as “Medicaid”, then the derived variable, ‘tot_Medicaid’, was assigned a value of ‘1’. This same logic was applied to each of the other primary health insurance types identified in the dataset. The derived variables for each primary health insurance type category were then aggregated to calculate a total number of times each of the primary health insurance type categories were used for the year to create the following derived dependent variables: (1) total number of managed care primary health insurance

type, (2) total number of Medicaid primary health insurance type, (3) total number of commercial primary health insurance type, (4) total number of facility billing primary health insurance type, (5) total number of other primary health insurance type (e.g., behavioral health, bad debt, and victim's assistance), and (6) total number of self-pay primary health insurance type. (It should be noted that "Primary health insurance type" was missing for 71.1% of students experiencing homelessness with matched CHS data [n=3,460 of 4,867 students].) One-way ANOVA showed no effect of housing type on total number of managed care primary health insurance type, $F(3,138)=1.05$, $p=.37$, total number of commercial primary health insurance type, $F(3,15)=0.30$, $p=.59$, total number of facility billing primary health insurance type, $F(3,3)=2.29$, $p=.27$, or total number of self-pay primary health insurance type $F(3,231)=0.31$, $p=.82$. However, one-way ANOVA showed that the effect of housing type on total number of Medicaid primary health insurance type was significant, $F(3,1467)=6.95$, $p=.0001$. Post hoc analyses revealed a significant mean difference between students living as literally homeless ($M=28.53$, $SD=62.98$), students living doubled up ($M=15.42$, $SD=23.52$), students living in a motel ($M=12.52$, $SD=20.37$), and students living in a shelter ($M=14.18$, $SD=15.32$), indicating students living as literally homeless used Medicaid as their primary health insurance type significantly more often when compared to students from each of the other three housing categories. Additionally, one-way ANOVA showed that the effect of housing type on total number of other primary health insurance type was significant, $F(3,84)=4.74$, $p=.004$. Post hoc analyses revealed a significant mean difference between students living as literally homeless ($M=11.67$, $SD=11.69$), students living doubled up ($M=1.88$, $SD=1.36$), and students living in a shelter ($M=4.25$, $SD=3.11$), indicating

students living as literally homeless used some other type of health insurance as their primary health insurance type significantly more often when compared to students that are living doubled up and students that are living in a shelter. (See Table 10 for a detailed summary of results for primary health insurance type outcomes by housing type. Figures 13 and 14 show the distribution of primary health insurance type by housing type where housing type had a significant effect.)

Table 10: Student healthcare utilization outcomes: Total primary health insurance type by housing type

Dependent Variable	Group 1: Shelter (n=89)		Group 2: Doubled up (n=1,111)		Group 3: Homeless (n=77)		Group 4: Motel (n=132)		<i>F</i>	<i>p</i>	<i>n</i> ²	Tukey's HSD
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Total managed care	16.67	32.23	11.54	14.28	14.6	13.03	6.56	4.63	1.05	.37	.023	ns
Total Medicaid	14.18	15.32	15.42	23.52	28.53	62.98	12.52	20.37	6.95	.0001	.014	3>1,2,4
Total commercial	0.00	0.00	5.36	4.62	0.00	0.00	3.50	0.71	0.30	.59	.021	ns
Total facility billing	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29	.27	.533	ns
Total other	4.25	3.11	3.57	4.49	11.67	11.69	2.5	2.12	4.74	.004	.149	3>1,2
Total self-pay	4.66	5.53	6.24	9.34	5.00	6.06	5.07	7.40	0.31	.82	.004	ns

* $p < .01$, ** $p < .001$, *** $p < .0001$, *ns*=non-significant.

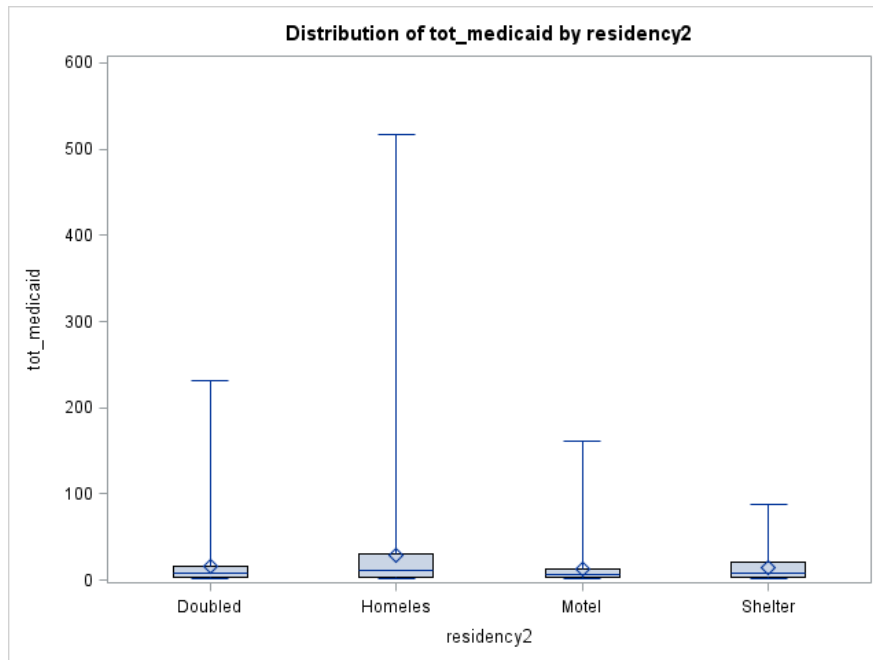


Figure 13: Distribution of total Medicaid primary health insurance by housing type

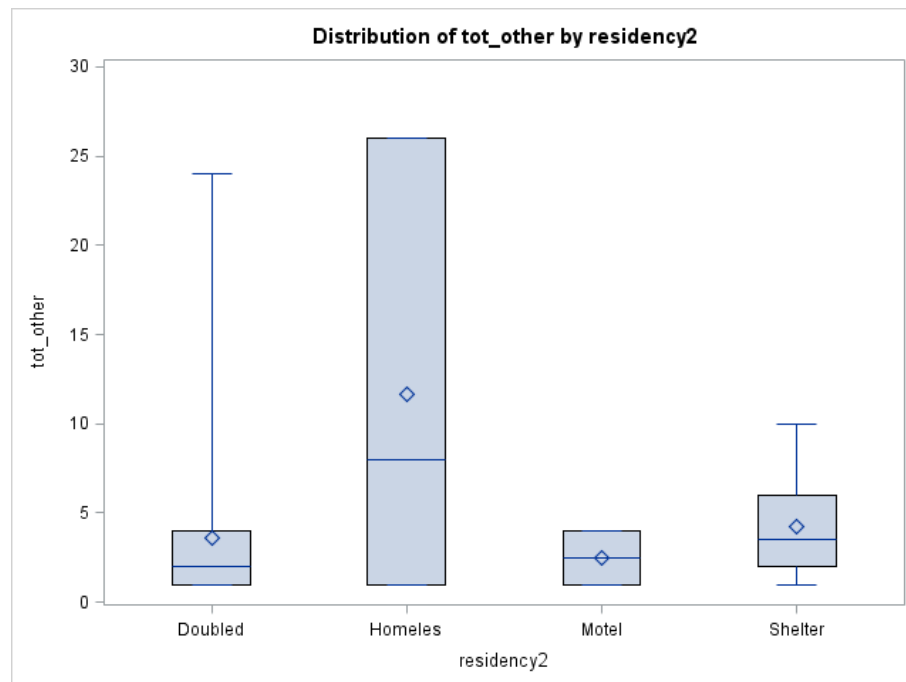


Figure 14: Distribution of total other primary health insurance by housing type

Next, primary health insurance type was matched with ACS admissions and emergent admissions. Specifically, if health insurance coverage was identified by the “Primary insurance type” variable provided in the CHS dataset and the healthcare encounter was identified as an ACS ED admission using the NYU algorithm method, the derived variable, “Total ACS ED with health insurance,” was assigned a value of ‘1’. If no health insurance coverage was specifically identified by the “Primary insurance type” variable and the healthcare encounter was identified as an ACS ED admission, the derived variable, “Total ACS ED with no health insurance,” was assigned a value of ‘1’. Both derived variables were then calculated to obtain two dependent variables, (1) total ACS ED admissions with health insurance and (2) total ACS ED admissions with no health insurance. This same logic was applied to emergent admissions and two derived variables were created to produce two dependent variables, (1) total emergent ED admissions with health insurance and (2) total emergent ED admissions with no health insurance. One-way ANOVA showed no effect of housing type on total ACS ED admissions with health insurance, $F(3,131)=0.28$, $p=.84$. There were insufficient sample sizes for analysis of total ACS ED admissions with no health insurance ($n=11$), total emergent ED admissions with health insurance ($n=0$), and total emergent ED admissions with no health insurance ($n=0$). (See Table 11 for a detailed summary of results for total ACS ED admissions with health insurance.)

Table 11: Student healthcare utilization outcomes: Total ACS ED admissions with health insurance by housing type

Dependent Variable	Group 1: Shelter (n=10)		Group 2: Doubled up (n=104)		Group 3: Homeless (n=7)		Group 4: Motel (n=11)		<i>F</i>	<i>p</i>	<i>n</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Total ACS ED admissions with insurance	6.90	4.58	5.76	4.58	6.00	5.20	6.55	2.38	0.28	.84	.006

Higher Verses Lower Healthcare Encounters

These next set of analyses examined students who had a higher number of healthcare encounters and students with a lower number of healthcare encounters. The threshold used to determine how to distinguish between higher and lower healthcare encounters was determined by using the mean value of total healthcare encounters for the year for the students included in this research. The mean value of total healthcare encounters for the year was 10. Therefore, higher healthcare encounters were defined as students with more than 10 total healthcare encounters for the year. Lower healthcare encounters were defined as students with 10 or less total healthcare encounters for the year.

The first set of analyses examined academic, attendance, and behavior outcomes to identify differences between housing type groups for students identified as having a higher number of healthcare encounters. The second set of analyses examined academic, attendance, and behavior outcomes to identify differences between housing type groups for students identified as having a lower number of healthcare encounters. The third set of analyses examined academic, attendance, and behavior outcomes to identify differences between the derived independent variable, healthcare encounters group (i.e., higher/lower healthcare encounters). One-way ANOVA were used for the first and

second set of analyses. Post hoc Tukey's HSD tests were used to determine exactly which housing type groups were significantly different. Independent group t-tests were used for the third set of analyses.

Higher Healthcare Encounters

For the higher healthcare encounters group, 26.79% of the student sample ($n=1,304$ of 4,867) met this criteria. For all academic and behavior outcomes examined, one-way ANOVA showed no effect of housing type. However, one-way ANOVA showed that the effect of housing type on percentage of days attended was significant, $F(3,1298)=2.86, p=.04$. Post hoc analyses revealed a significant mean difference between students living as literally homeless ($M=87.74, SD=12.59$), students living doubled up ($M=89.76, SD=10.12$), and students living in a shelter ($M=89.71, SD=10.21$), indicating students living as literally homeless and that have higher healthcare encounters are absent from school significantly more often when compared to students with higher healthcare encounters that are living in a shelter and students with higher healthcare encounters that are living doubled up. (See Table 12 for a detailed summary of results for academic performance, attendance, and behavior outcomes for students with higher healthcare encounters by housing type. Figure 15 shows the distribution of percentage of days attended by housing type.)

Table 12: Academic performance, behavior and attendance outcomes for students with higher healthcare encounters by housing type

Dependent Variable	Group 1: Shelter (n=80)		Group 2: Doubled up (n=1,048)		Group 3: Homeless (n=102)		Group 4: Motel (n=74)		F	p	n ²	Tukey's HSD test
	M	SD	M	SD	M	SD	M	SD				
Reading EOG	-0.50	0.88	-0.55	0.88	-0.62	0.93	-0.59	0.88	0.48	.70	.0034	ns
Math EOC	-0.82	0.65	-0.73	0.77	-0.39	0.81	-0.87	0.73	1.73	.16	.0112	ns
English I EOC	-0.54	1.04	-0.39	0.79	-0.22	0.47	-0.79	0.84	1.36	.26	.0386	ns
Algebra I EOC	-0.65	0.97	-0.52	0.82	-0.53	0.69	-0.80	0.70	0.87	.42	.0254	ns
Total ISS days	0.21	0.98	0.51	2.08	0.81	2.12	0.32	1.29	0.76	.51	.0018	ns
Total ISS days – elementary	0.00	0.00	0.04	0.32	0.07	0.38	0.05	0.22	0.38	.77	.0020	ns
Total ISS days – middle	1.39	2.66	1.76	3.72	2.77	5.07	1.28	3.30	0.48	.70	.0052	ns
Total ISS days – high	0.38	1.39	0.99	3.59	0.54	1.40	0.25	0.58	0.63	.60	.0045	ns
Total OSS days	1.27	3.81	2.34	6.55	2.27	5.72	2.13	6.19	0.62	.60	.0014	ns
Total OSS days – elementary	0.64	1.51	0.97	3.52	0.93	2.04	1.23	3.26	0.22	.88	.0012	ns
Total OSS days – middle	5.89	10.34	6.05	10.79	2.77	3.09	7.06	12.97	0.45	.71	.0049	ns
Total OSS days – high	1.46	2.93	3.95	8.91	3.50	9.07	2.56	4.35	0.48	.70	.0035	ns
Total Incidents	8.23	14.04	8.81	19.03	6.08	13.05	12.61	26.99	1.67	.17	.0040	ns
Total incidents – elementary	7.11	12.38	5.97	15.23	4.07	7.27	9.95	25.62	0.99	.40	.0053	ns
Total incidents – middle	16.22	19.93	15.64	23.37	16.38	27.54	22.65	36.55	0.44	.73	.0047	ns
Total incidents - high	2.15	2.58	8.29	19.82	5.09	9.24	8.71	13.48	0.91	.44	.0071	ns
Total Incidents ISS	1.88	4.92	2.44	7.01	2.33	5.72	2.41	8.44	0.98	.40	.0023	ns
Total incidents ISS – elementary	1.87	4.00	1.68	6.02	0.78	2.04	2.76	9.22	0.63	.60	.0034	ns
Total incidents ISS – middle	6.00	9.28	5.74	9.97	7.15	12.08	7.24	11.19	0.19	.91	.0020	ns
Total incidents ISS - high	0.38	0.96	2.69	5.85	1.52	3.57	2.79	4.59	1.39	.25	.0108	ns
Total Incidents OSS	5.73	9.72	5.93	13.48	4.09	8.59	8.80	18.98	1.74	.16	.0041	ns
Total incidents OSS – elementary	5.24	9.67	4.29	10.88	3.30	5.82	7.18	17.12	0.98	.40	.0052	ns
Total incidents OSS – middle	10.22	12.15	9.90	15.54	9.23	16.60	15.41	26.91	0.62	.60	.0067	ns
Total incidents OSS - high	1.77	2.59	5.59	15.05	3.57	6.96	5.93	10.59	0.62	.60	.0049	ns
Percentage of days attended	89.71	10.21	89.76	10.12	87.74	12.59	88.76	9.89	2.86	.04*	.0066	1,2>3

* $p < .05$, ns=non-significant.

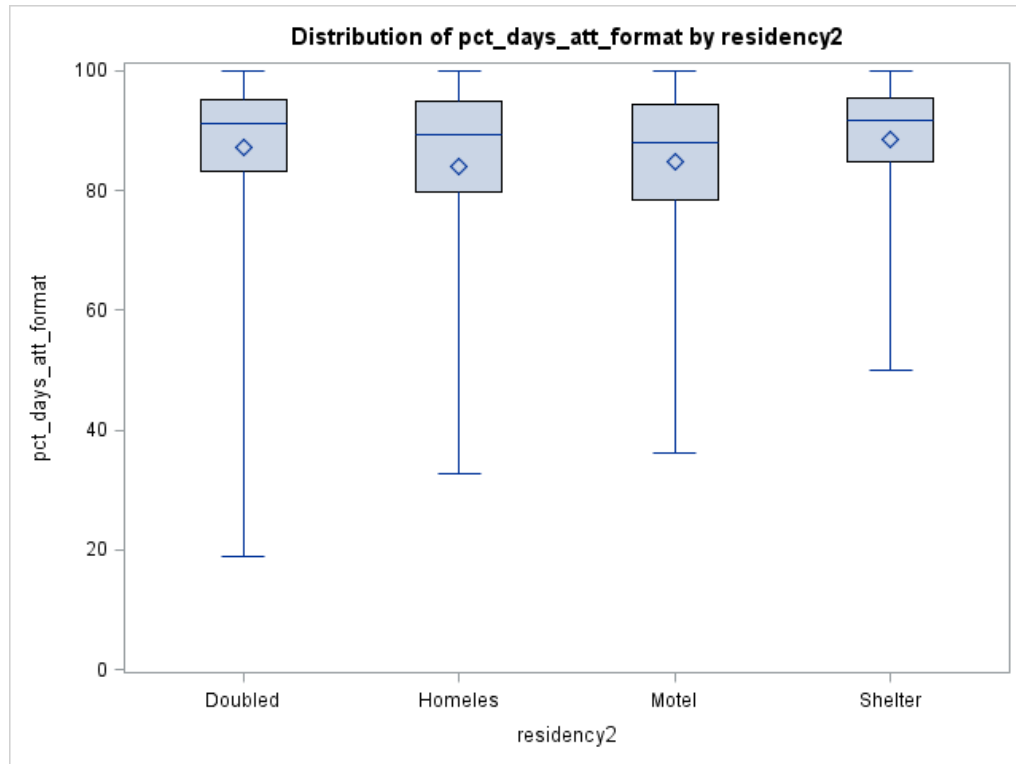


Figure 15. Distribution of percentage of days attended by housing type for students with higher healthcare encounters

Lower Healthcare Encounters

For the lower healthcare encounters group, 73.21% of the student sample (n=3,563 of 4,867) met this criteria. For all academic and attendance outcomes examined, one-way ANOVA showed no effect of housing type for students with lower healthcare encounters. However, one-way ANOVA showed that the effect of housing type on total ISS day assignments was significant, $F(3,3559)=7.58, p<.0001$. Post hoc analyses revealed a significant mean difference between students living as literally homeless ($M=0.81, SD=2.12$), students living doubled up ($M=0.51, SD=2.08$), students living in a motel ($M=0.32, SD=1.29$), and students living in a shelter ($M=0.21, SD=0.98$), indicating students living as literally homeless and that have lower healthcare encounters

are receiving significantly more ISS days assignments when compared to each of the other three housing type groups.

Total ISS days were next subset by school level. For elementary school students with lower healthcare encounters, one-way ANOVA showed that the effect of housing type was significant, $F(3, 2022)=3.75, p=.01$. Post hoc analyses revealed a significant mean difference between elementary school students living as literally homeless ($M=0.22, SD=1.28$), elementary school students living doubled up ($M=0.05, SD=0.50$), elementary school students living in a motel ($M=0.00, SD=1.00$), and elementary school students living in a shelter ($M=0.01, SD=0.17$), indicating elementary school students living as literally homeless and that have lower healthcare encounters are receiving significantly more ISS days assignments when compared to each of the other three housing type groups. For middle school students with lower healthcare encounters, one-way ANOVA showed that the effect of housing type on total ISS day assignments was significant, $F(3,740)=3.23, p=.02$. Post hoc analyses revealed a significant mean difference between middle school students living as literally homeless ($M=2.17, SD=3.16$) and middle school students living in a shelter ($M=0.48, SD=1.32$), indicating middle school students living as literally homeless and that have lower healthcare encounters are receiving significantly more ISS days assignments when compared to middle school students living in a shelter. For high school students with lower healthcare encounters, one-way ANOVA showed no effect of housing type on total ISS day assignments, $F(3,714)=1.04, p=.37$. One-way ANOVA showed no effect of housing type on any of the other behavior outcomes that were examined. (See Table 13 for a detailed summary of results for academic performance, attendance, and behavior outcomes for

students with lower healthcare encounters by housing type. Figures 16 through 18 show the distributions of total ISS days dependent variables by housing type where the effect of housing type was significant.)

Table 13: Academic performance, behavior and attendance outcomes for students with lower healthcare encounters by housing type

Dependent Variable	Group 1: Shelter (n=200)		Group 2: Doubled up (n=2,860)		Group 3: Homeless (n=222)		Group 4: Motel (n=281)		F	p	n ²	Tukey's HSD test
	M	SD	M	SD	M	SD	M	SD				
Reading EOG	-0.45	0.93	-0.56	0.87	-0.70	0.84	-0.57	0.89	0.92	.43	.0022	ns
Math EOC	-0.61	0.79	-0.64	0.76	-0.63	0.75	-0.68	0.82	0.13	.95	.0003	ns
English I EOC	-0.54	1.04	-0.38	0.79	-0.22	0.47	-0.79	0.84	0.67	.57	.0145	ns
Algebra I EOC	-0.65	0.97	-0.52	0.82	-0.53	0.69	-0.80	0.70	0.16	.92	.0034	ns
Total ISS days	0.21	0.98	0.51	2.08	0.81	2.12	0.32	1.29	7.58	<.0001**	.0064	1,2,4<3
Total ISS days – elementary	0.01	0.17	0.05	0.49	0.22	1.27	0.00	1.00	3.75	.01*	.0055	1,2,4<3
Total ISS days – middle	0.48	1.32	1.10	2.46	2.17	3.16	1.03	2.08	3.23	.02*	.0129	1<3
Total ISS days – high	0.35	0.88	0.83	2.71	1.13	2.03	0.41	1.07	1.04	.37	.0044	ns
Total OSS days	1.27	3.81	2.34	6.55	2.27	5.72	2.13	6.19	2.17	.09	.0018	ns
Total OSS days – elementary	0.54	1.71	0.61	2.33	0.87	3.27	0.86	3.19	0.88	.45	.0013	ns
Total OSS days – middle	1.68	3.50	4.19	8.42	3.44	6.93	3.11	5.29	1.57	.20	.0063	ns
Total OSS days – high	2.70	5.28	4.28	8.69	3.15	5.57	4.73	11.66	0.72	.54	.0030	ns
Total Incidents	6.73	16.49	7.63	18.23	6.85	13.71	7.74	23.42	0.33	.80	.0003	ns
Total incidents – elementary	4.46	11.88	5.35	17.14	4.85	10.94	6.09	26.54	0.23	.87	.0004	ns
Total incidents – middle	11.05	30.60	11.85	20.73	16.38	21.71	8.91	16.77	0.95	.42	.0039	ns
Total incidents – high	7.38	10.59	8.46	16.67	6.18	11.31	5.67	9.88	0.80	.49	.0038	ns
Total Incidents ISS	1.88	4.92	2.44	7.01	2.33	5.72	2.41	8.45	0.71	.54	.0006	ns
Total incidents ISS – elementary	1.15	4.11	1.59	6.99	1.36	3.71	1.99	9.57	0.38	.77	.0006	ns
Total incidents ISS – middle	2.60	5.54	4.02	7.32	6.38	10.42	2.63	7.24	2.36	.07	.0098	ns
Total incidents ISS – high	2.90	5.37	2.73	6.28	2.37	4.67	1.85	3.55	0.34	.80	.0016	ns

Dependent Variable	Group 1: Shelter (n=200)		Group 2: Doubled up (n=2,860)		Group 3: Homeless (n=222)		Group 4: Motel (n=281)		F	p	n ²	Tukey's HSD test
	M	SD	M	SD	M	SD	M	SD				
Total Incidents OSS	4.85	13.05	5.19	12.83	4.52	9.46	5.33	15.76	0.19	.90	.0002	ns
Total incidents OSS – elementary	3.31	9.22	3.76	11.52	3.49	8.36	4.10	17.36	0.12	.95	.0002	ns
Total incidents OSS – middle	8.45	25.64	7.83	15.23	10.00	13.30	6.28	11.36	0.45	.72	.0019	ns
Total incidents OSS - high	4.48	8.67	5.73	12.45	3.81	8.37	3.82	7.30	0.90	.44	.0042	ns
Percentage of days attended	89.71	10.21	89.76	10.12	87.74	12.59	88.76	9.89	2.31	.07	.0019	ns

* $p < .05$, ** $p < .001$, ns=non-significant.

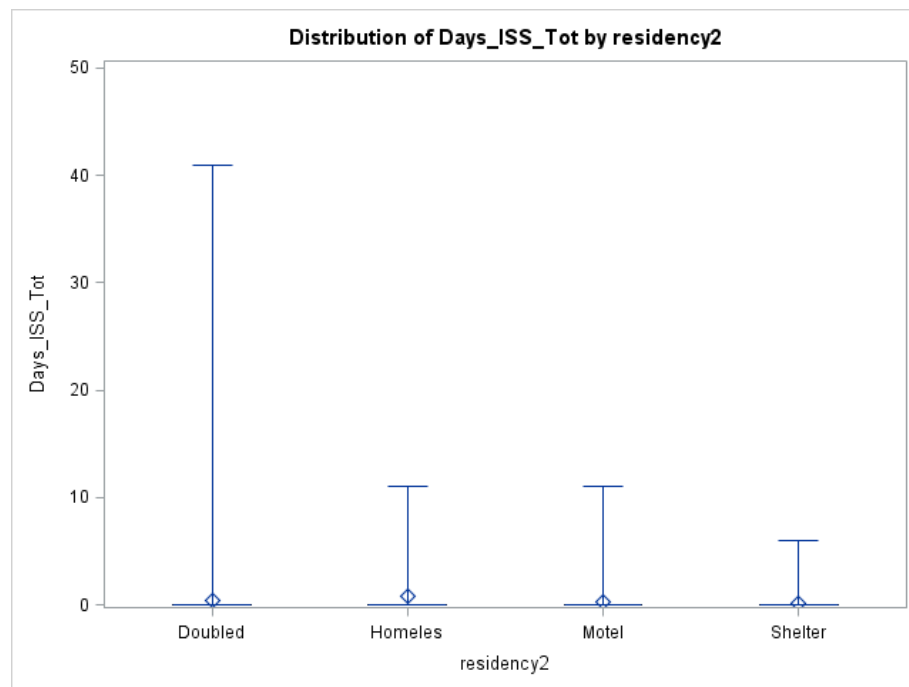


Figure 16: Distribution of total ISS days for lower healthcare encounters by housing type

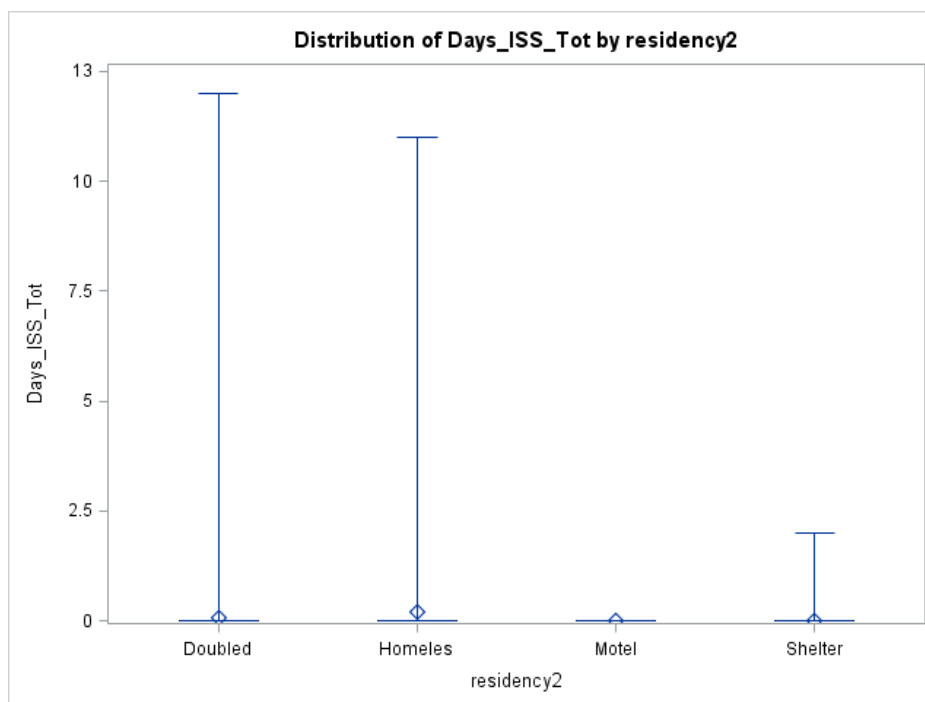


Figure 17: Distribution of total ISS days for students in elementary school with lower healthcare encounters by housing type

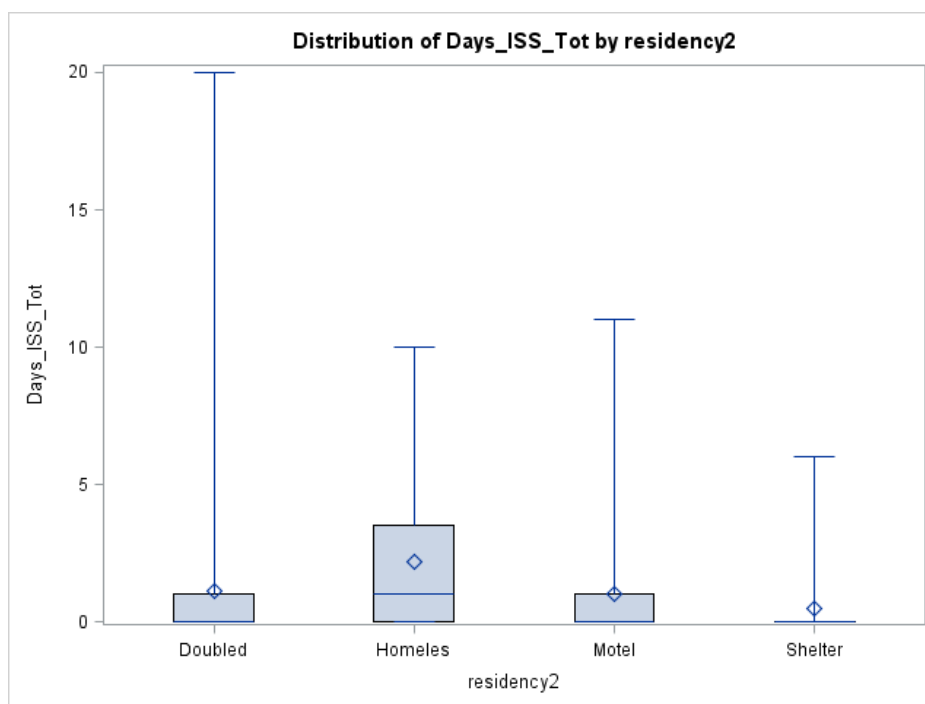


Figure 18: Distribution of total ISS days for students in middle school with lower healthcare encounters by housing type

Higher Healthcare Encounters Verses Lower Healthcare Encounters

For the last set of analyses, academic performance, attendance, and behavior were examined to identify differences between the higher and lower healthcare encounters group. For these analyses, independent group t-tests were performed. For EOG reading z-scores, independent group t-tests showed no significant mean differences between the healthcare encounters group ($t(1659)=-0.59$, $p=.55$, 95% CI for mean difference -0.13 to 0.07). For EOG math z-scores, independent group t-tests revealed a statistically significant difference between the healthcare encounters group ($t(1812)=2.24$, $p=.03$, 95% CI for mean difference .01 to .17) indicating that, on average, students experiencing homelessness and that have higher healthcare encounters ($M=-0.73$, $SD=0.77$) are performing significantly worse in math when compared to students experiencing homelessness and that have lower healthcare encounters ($M=-0.64$, $SD=0.77$). For both English I ($t(209)=1.03$, $p=.30$, 95% CI for mean difference -0.11 to 0.34) and Algebra EOC z-scores ($t(213)=0.81$, $p=.42$, 95% CI for mean difference -0.14 to 0.33), independent group t-tests showed no significant mean differences between the healthcare encounters group.

For percentage of days attended, independent group t-test revealed a statistically significant difference between the healthcare encounters group, ($t(4856)=11.21$, $p<.001$, 95% CI for mean difference 3.05 to 4.34), indicating that, on average, students experiencing homelessness and that have higher healthcare encounters ($M=86.84$, $SD=12.53$) are absent from school significantly more when compared to students experiencing homelessness and that have lower healthcare encounters ($M=90.54$, $SD=9.17$).

For total ISS days, independent group t-test revealed a statistically significant difference between the healthcare encounters group, ($t(4858)=-3.91, p<.001, 95\%$ CI for mean difference -0.38 to -0.13), indicating that, on average, students experiencing homelessness and that have higher healthcare encounters ($M=0.68, SD=2.62$) are receiving significantly more ISS days assignments when compared to students experiencing homelessness and that have lower healthcare encounters ($M=0.43, SD=1.70$). Total ISS days were next subset by school level. For elementary school students, independent group t-test showed no significant differences in total ISS days between the healthcare encounters group, ($t(2583)=0.66, p=.51, 95\%$ CI for mean difference -0.03 to 0.06). For middle school students, independent group t-test revealed a statistically significant difference in total ISS days assignments between the healthcare encounters group, ($t(1022)=-3.24, p=.001, 95\%$ CI for mean difference -1.03 to -0.25), indicating that, on average, middle school students experiencing homelessness and that have higher healthcare encounters ($M=1.76, SD=3.70$) are receiving significantly more ISS days assignments when compared to middle school students experiencing homelessness and that have lower healthcare encounters ($M=1.11, SD=2.43$). For high school students, independent group t-test showed no significant differences in total ISS days between the healthcare encounters group, ($t(1129)=-0.31, p=.76, CI$ for mean difference -0.39 to 0.29).

For total OSS days, independent group t-test revealed a statistically significant difference between the healthcare encounters group, ($t(4858)=-4.45, p<.001, 95\%$ CI for mean difference -1.32 to -0.51), indicating that, on average, students experiencing homelessness and that have higher healthcare encounters ($M=2.92, SD=7.59$) are

receiving significantly more OSS days assignments when compared to students experiencing homelessness and that have lower healthcare encounters ($M=2.01$, $SD=5.81$). Total OSS days were next subset by school level. For elementary school students, independent group t-test revealed a statistically significant difference in total OSS days assignments between the healthcare encounters group, ($t(2583)=-2.51$, $p=.01$, 95% CI for mean difference -0.57 to -0.07), indicating that, on average, elementary school students experiencing homelessness and that have higher healthcare encounters ($M=0.96$, $SD=3.32$) are receiving significantly more OSS days assignments when compared to elementary school students experiencing homelessness and that have lower healthcare encounters ($M=0.64$, $SD=2.43$). For middle school students, independent group t-test revealed a statistically significant difference in total OSS days assignments between the healthcare encounters group, ($t(1022)=-3.31$, $p=.001$, 95% CI for mean difference -3.24 to -0.83), indicating that, on average, middle school students experiencing homelessness and that have higher healthcare encounters are receiving significantly more OSS days assignments ($M=5.95$, $SD=10.66$) when compared to middle students experiencing homelessness and that have lower healthcare encounters ($M=3.92$, $SD=7.95$). For high school students, independent group t-test showed no significant differences in total OSS days between the healthcare encounters group, ($t(1129)=0.68$, $p=.50$, 95% CI for mean difference -0.68 to 1.39).

For total incidents, independent group t-test revealed a statistically significant difference between the healthcare encounters group, ($t(4690)=-2.80$, $p=.005$, 95% CI for mean difference -2.86 to -0.50), indicating that, on average, students experiencing homelessness and that have higher healthcare encounters are involved in significantly

more incidents at school ($M=8.77$, $SD=18.91$) when compared to students experiencing homelessness and that have lower healthcare encounters ($M=7.09$, $SD=18.05$). Total incidents were next subset by school level. For elementary school students, independent group t-test showed no significant differences in total incidents between the healthcare encounters group, ($t(2536)=-1.11$, $p=.27$, 95% CI for mean difference -2.53 to 0.70). For middle school students, independent group t-test revealed a statistically significant difference in total incidents between the healthcare encounters group, ($t(1003)=-2.83$, $p=.005$, 95% CI for mean difference -7.42 to -1.34), indicating that, on average, middle school students experiencing homelessness and that have higher healthcare encounters are involved in significantly more incidents at school ($M=16.14$, $SD=24.25$) when compared to middle school students experiencing homelessness and that have lower healthcare encounters ($M=11.76$, $SD=21.12$). For high school students, independent group t-test showed no significant differences in total incidents between the healthcare encounters group, ($t(1030)=0.32$, $p=.75$, 95% CI for mean difference -1.75 to 2.43).

For total incidents that resulted in ISS, independent group t-test revealed a statistically significant difference between the healthcare encounters group, ($t(4690)=-2.64$, $p=.008$, 95% CI for mean difference -1.05 to -0.15), indicating that, on average, students experiencing homelessness and that have higher healthcare encounters are involved in significantly more incidents that result in ISS ($M=2.84$, $SD=7.11$) when compared to students experiencing homelessness and that have lower healthcare encounters ($M=2.24$, $SD=6.87$). Total incidents that resulted in ISS were next subset by school level. For elementary school students, independent group t-test showed no significant differences in total incidents that resulted in ISS between the healthcare

encounters group, ($t(2536)=-0.45$, $p=.65$, 95% CI for mean difference -0.78 to 0.49). For middle school students, independent group t-test revealed a statistically significant difference in total incidents that resulted in ISS between the healthcare encounters group, ($t(1003)=-3.42$, $p=.0006$, 95% CI for mean difference -3.12 to -0.85), indicating that, on average, middle school students experiencing homelessness and that have higher healthcare encounters are involved in significantly more incidents that result in ISS ($M=5.91$, $SD=10.06$) when compared to students experiencing homelessness and that have lower healthcare encounters ($M=3.93$, $SD=7.42$). For high school students, independent group t-test showed no significant differences in total incidents between the healthcare encounters group, ($t(1030)=0.51$, $p=.61$, 95% CI for mean difference -0.54 to 0.92).

For total incidents that resulted in OSS, independent group t-test revealed a statistically significant difference between the healthcare encounters group, ($t(4690)=-2.55$, $p=.01$, 95% CI for mean difference -1.91 to -0.25), indicating that, on average, students experiencing homelessness and that have higher healthcare encounters are involved in significantly more incidents that result in OSS ($M=5.93$, $SD=13.34$) when compared to students experiencing homelessness and that have lower healthcare encounters ($M=4.85$, $SD=12.70$). Total incidents that resulted in OSS were next subset by school level. For elementary school students, independent group t-test showed no significant differences in total incidents that resulted in OSS between the healthcare encounters group, ($t(2536)=-1.38$, $p=.17$, 95% CI for mean difference -1.87 to 0.33). For middle school students, independent group t-test revealed a statistically significant difference in total incidents that resulted in OSS between the healthcare encounters

group, ($t(1003)=-2.16, p=.03, 95\%$ CI for mean difference -4.57 to -0.22), indicating that, on average, middle school students experiencing homelessness and that have higher healthcare encounters are involved in significantly more incidents that result in OSS ($M=10.22, SD=16.25$) when compared to middle school students experiencing homelessness and that have lower healthcare encounters ($M=7.83, SD=15.59$). For high school students, independent group t-test showed no significant differences in total incidents between the healthcare encounters group, ($t(1030)=0.19, p=.85, 95\%$ CI for mean difference -1.43 to 1.73). (See Table 14 for a detailed summary of results for academic performance, attendance, and behavior outcome comparisons between the healthcare encounters group. Figures 19 through 30 show the distributions of academic performance, attendance, and behavior dependent variables by healthcare encounters group where mean differences were significant.)

Table 14: Academic performance, attendance, and behavior outcome comparisons between the healthcare encounters group

Dependent Variables	Group						95% CI for Mean Difference	t	df	p
	Lower healthcare encounters (n=3,563)			Higher healthcare encounters (n=1,304)						
	M	SD	n	M	SD	n				
Reading EOG	-0.56	0.87	1234	-0.53	0.90	427	-0.13, 0.07	-0.59	1659	.55
Math EOG	-0.64	0.77	1352	-0.73	0.77	462	0.01, 0.17	2.24	1812	.03*
English I EOC	-0.36	0.76	140	-0.48	0.84	71	-0.10, 0.34	1.03	209	.30
Algebra I EOC	-0.51	0.81	145	-0.61	0.81	70	-0.14, 0.33	0.81	213	.81
Percentage of days attended	90.54	9.17	3560	86.84	12.53	1300	3.05, 4.34	11.21	4856	.001**
Total ISS days	0.43	1.70	3560	0.68	2.62	1300	-0.38, -0.13	-3.91	4858	<.0001**
Total ISS days-Elementary school	0.05	0.53	2023	0.04	0.31	562	-0.03, 0.06	0.66	2583	.51
Total ISS days-Middle school	1.11	2.43	741	1.76	3.70	283	-1.03, -0.25	-3.24	1022	.001**

Dependent Variables	Group						95% CI for Mean Difference	t	df	p
	Lower healthcare encounters (n=3,563)			Higher healthcare encounters (n=1,304)						
	M	SD	n	M	SD	n				
Total ISS days-High school	0.83	2.54	715	0.88	3.26	416	-0.39, 0.29	-0.31	1129	.76
Total OSS days	2.01	5.81	3560	2.92	7.59	1300	-1.32, -0.51	-4.45	4858	<.0001** *
Total OSS days-Elementary school	0.64	2.43	2023	0.96	3.32	562	-0.57, -0.07	-2.51	2583	.01*
Total OSS days-Middle school	3.92	7.95	741	5.95	10.66	283	-3.24, -0.83	-3.31	1022	.001**
Total OSS days-High school	4.12	8.49	715	3.76	8.68	416	-0.68, 1.39	0.68	1129	.50
Total incidents	7.09	18.05	3432	8.77	18.91	1260	-2.86, -0.50	-2.80	4690	.005**
Total incidents-Elementary school	5.33	17.57	1982	6.25	15.70	556	-2.53, 0.70	-1.11	2536	.27
Total incidents-Middle school	11.76	21.12	724	16.14	24.25	281	-7.42, -1.34	-2.83	1003	.005**
Total incidents-High school	7.97	15.60	645	7.63	18.14	387	-1.75, 2.43	0.32	1030	.75
Total incidents ISS	2.24	6.87	3432	2.84	7.11	1260	-1.05, -0.15	-2.64	4690	.008**
Total incidents ISS-Elementary school	1.58	6.97	1982	1.73	6.03	556	-0.78, 0.49	-0.45	2536	.65
Total incidents ISS-Middle school	3.93	7.42	724	5.91	10.06	281	-3.12, -0.85	-3.42	1003	.0006***
Total incidents ISS -High school	2.64	5.94	645	2.45	5.45	387	-0.54, 0.92	0.51	1030	.61
Total incidents OSS	4.85	12.70	3432	5.93	13.34	1260	-1.91, -0.25	-2.55	4690	.01*
Total incidents OSS-Elementary school	3.75	11.84	1982	4.52	11.15	556	-1.87, 0.33	-1.38	2536	.17
Total incidents OSS-Middle school	7.83	15.59	724	10.22	16.25	281	-4.57, -0.22	-2.16	1003	.03*
Total incidents OSS -High school	5.34	11.67	645	5.19	13.78	387	-1.43	1.73	1030	.85

* $p < .05$, ** $p < .01$, *** $p < .001$.

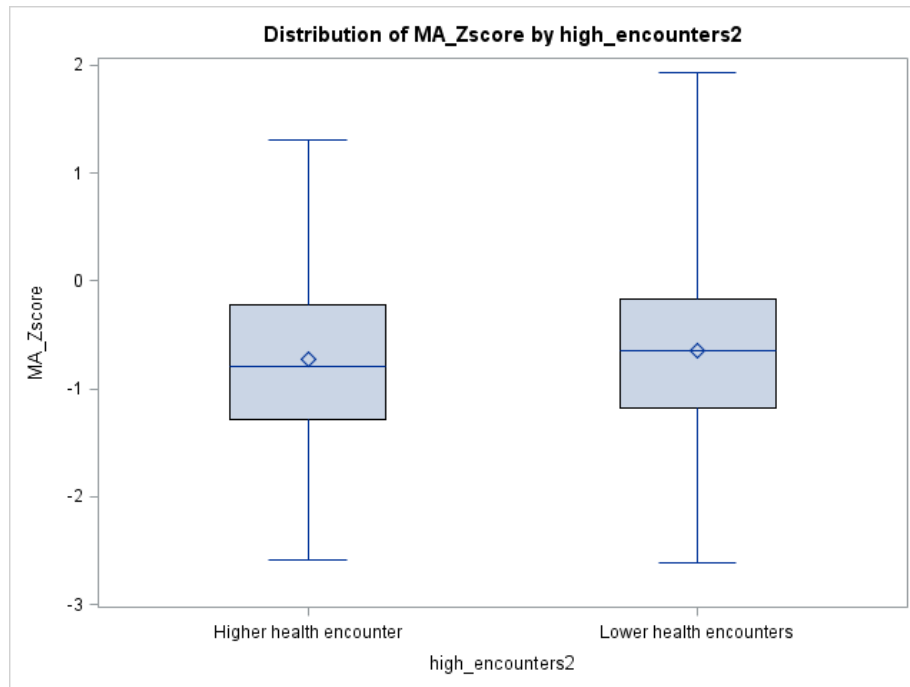


Figure 19: Distribution of EOG math z-scores by healthcare encounter group

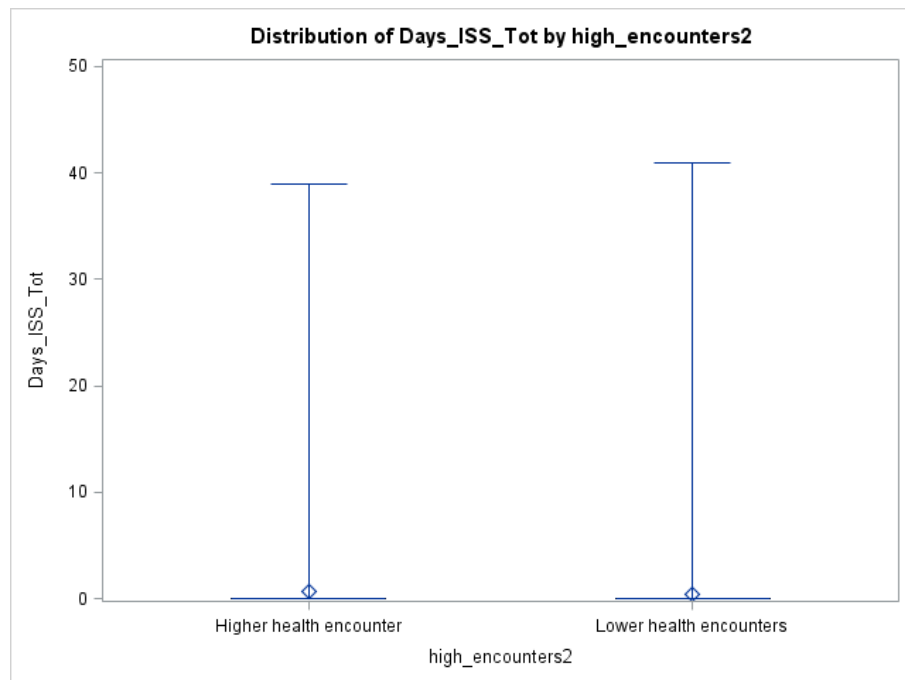


Figure 20. Distribution of total ISS days by healthcare encounter group

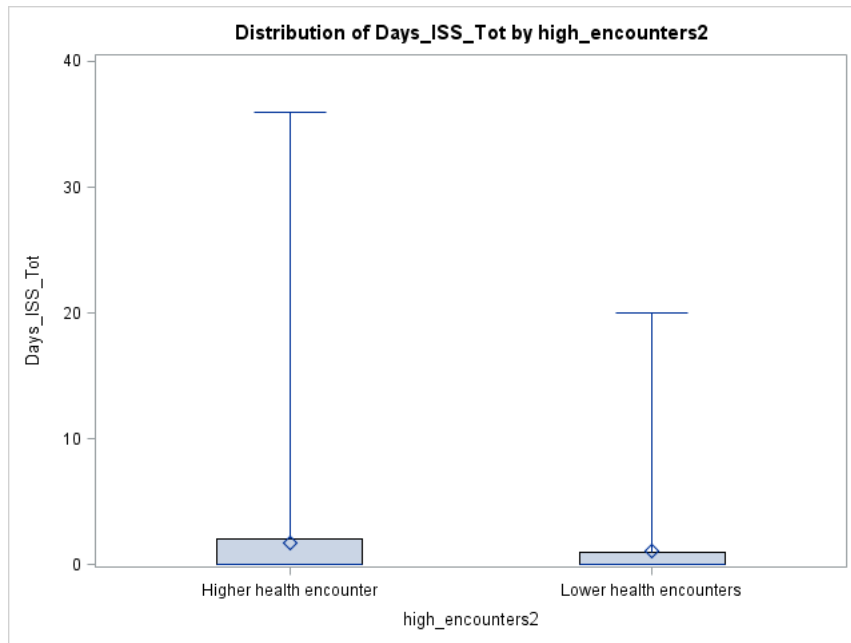


Figure 21. Distribution of total ISS days for middle school students by healthcare encounter group

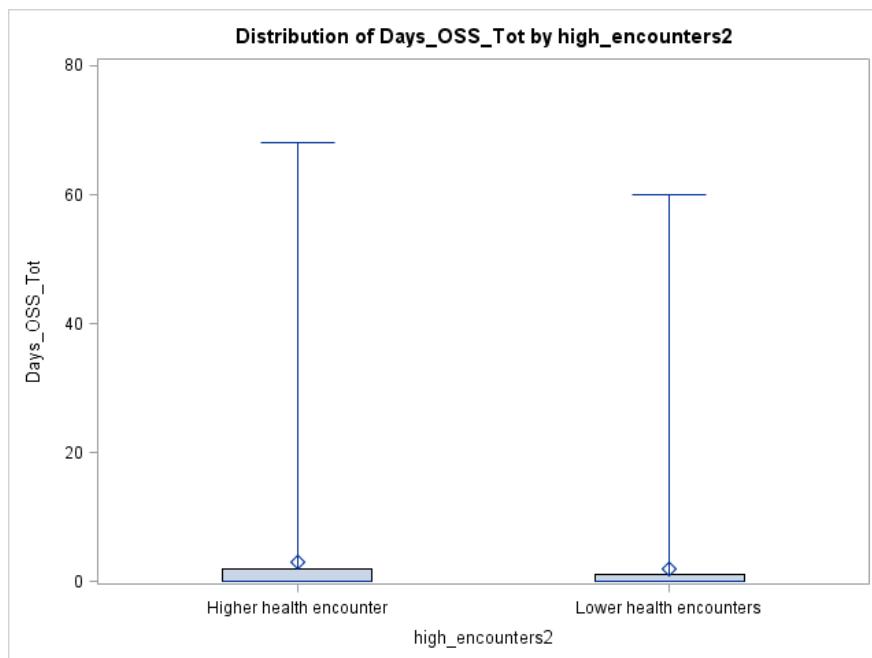


Figure 22. Distribution of total OSS days by healthcare encounter group

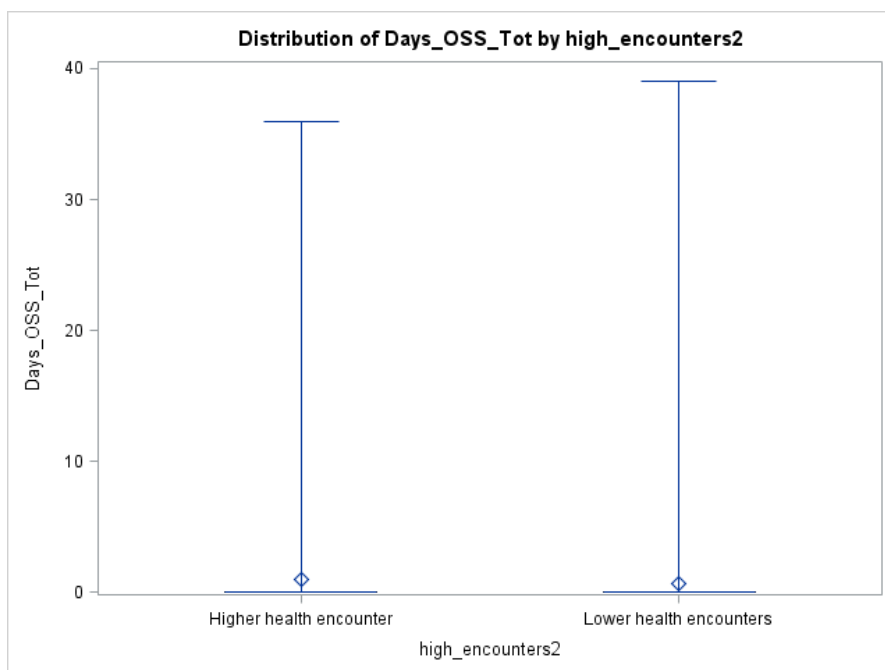


Figure 23. Distribution of total OSS days for elementary school students by healthcare encounter group

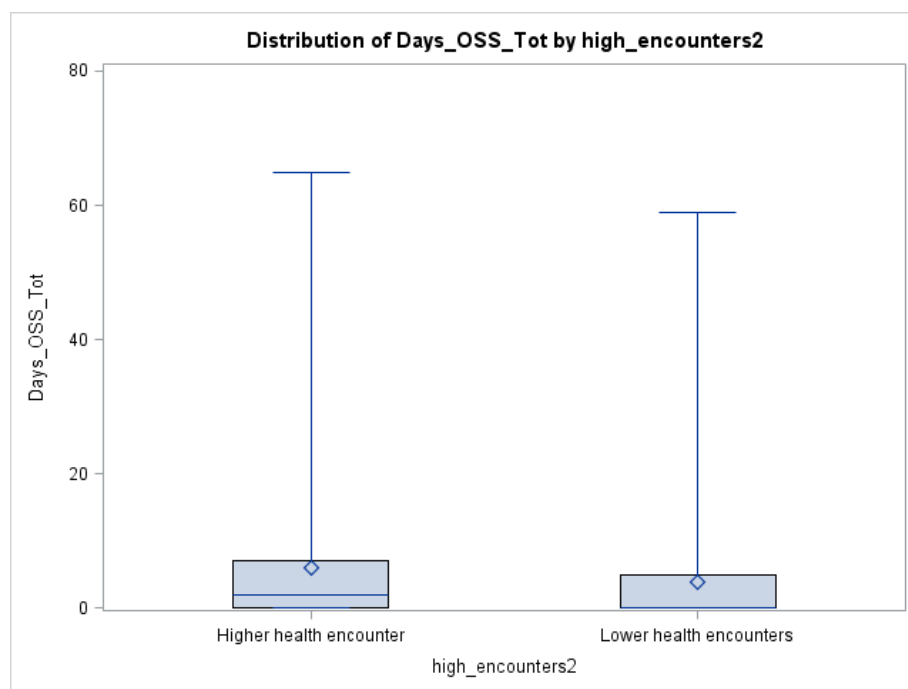


Figure 24. Distribution of total OSS days for middle school students by healthcare encounter group

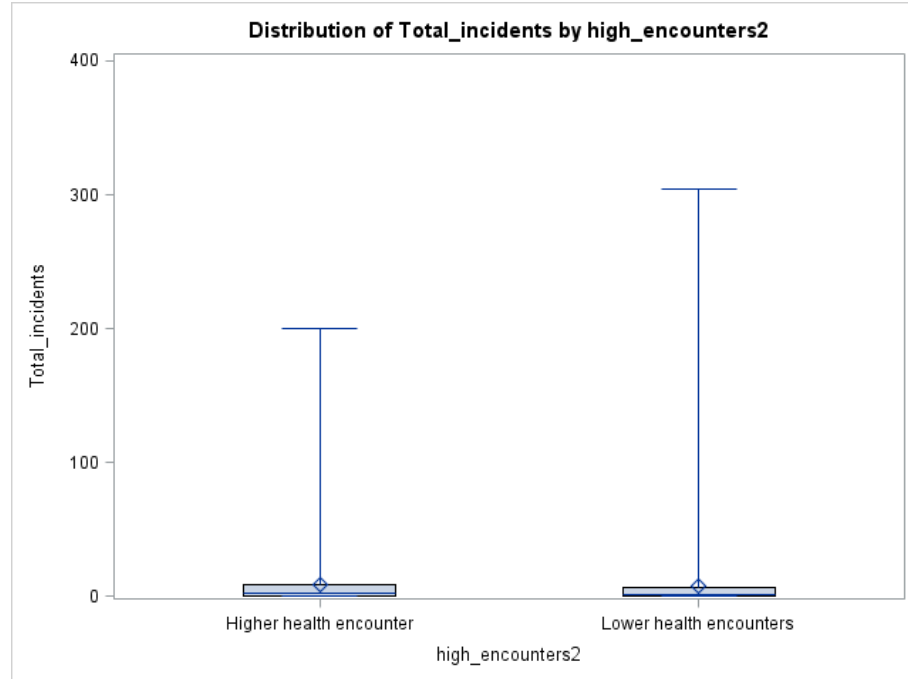


Figure 25. Distribution of total incidents by healthcare encounter group

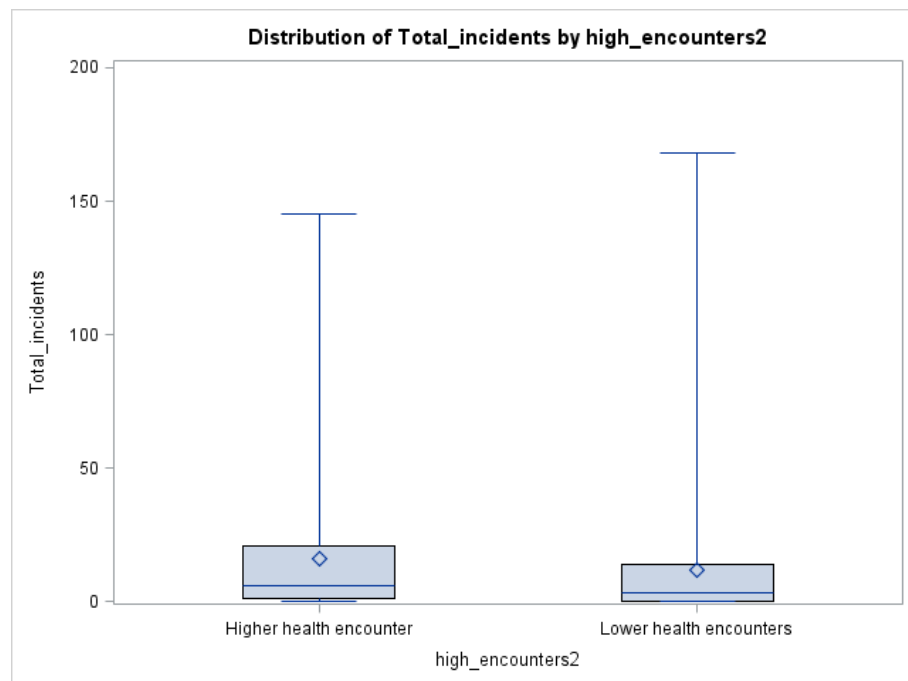


Figure 26. Distribution of total incidents for middle school students by healthcare encounter group

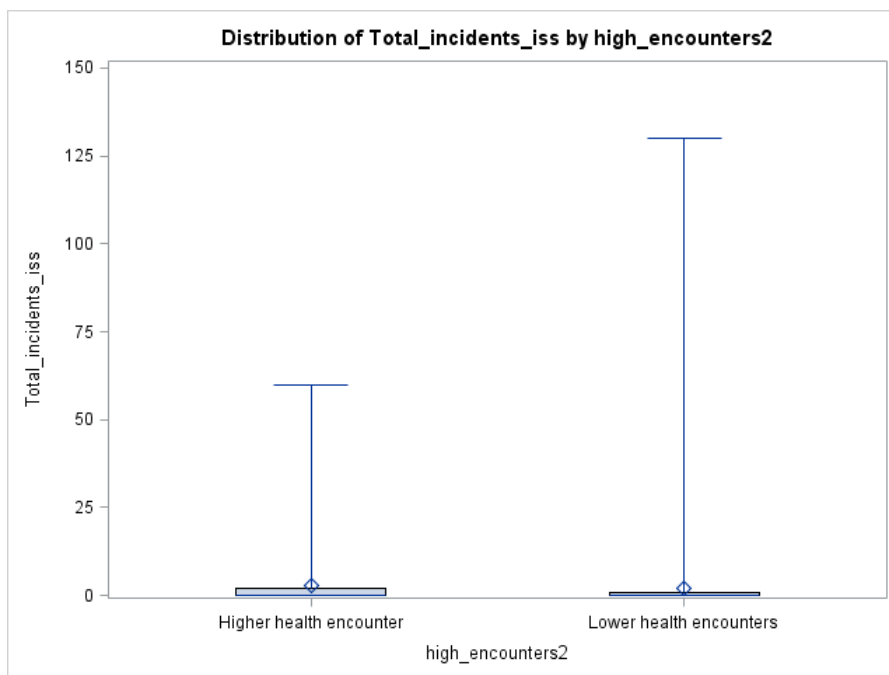


Figure 27. Distribution of total incidents that resulted in ISS days by healthcare encounter group

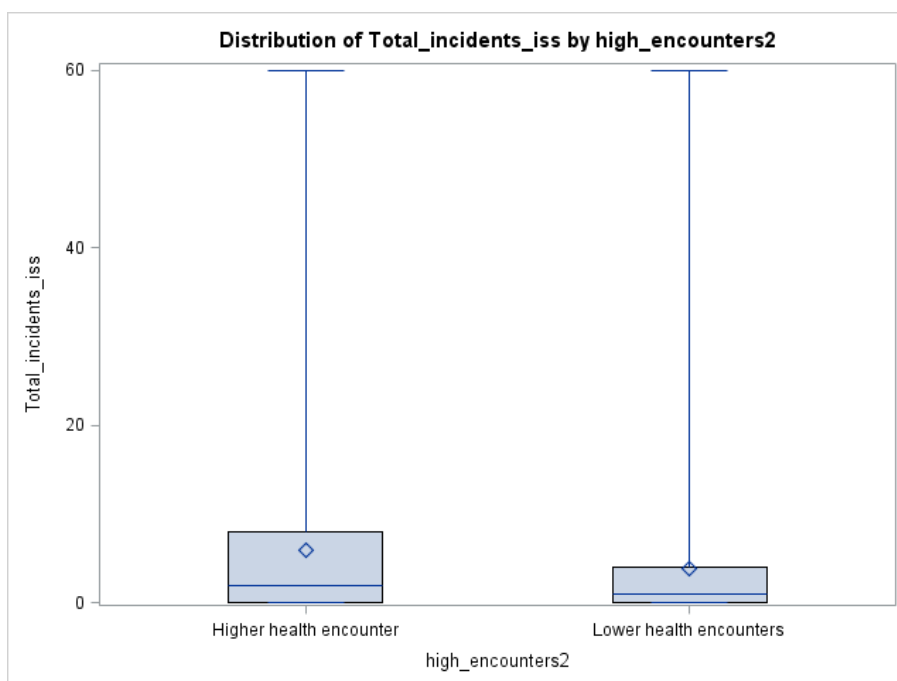


Figure 28. Distribution of total incidents that resulted in ISS days for middle school students by healthcare encounter group

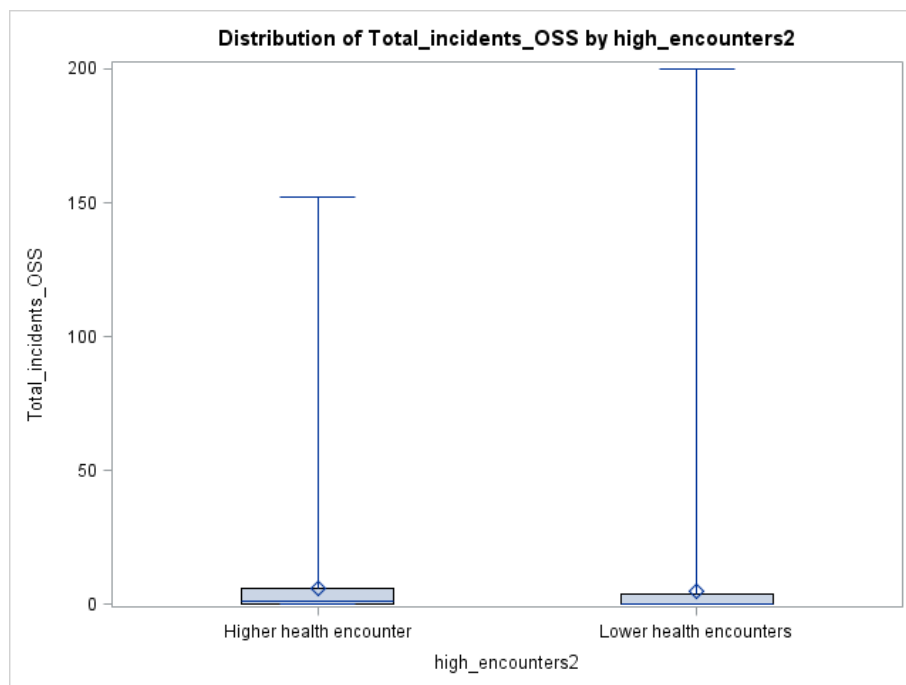


Figure 29. Distribution of total incidents that resulted in OSS days by healthcare encounter group

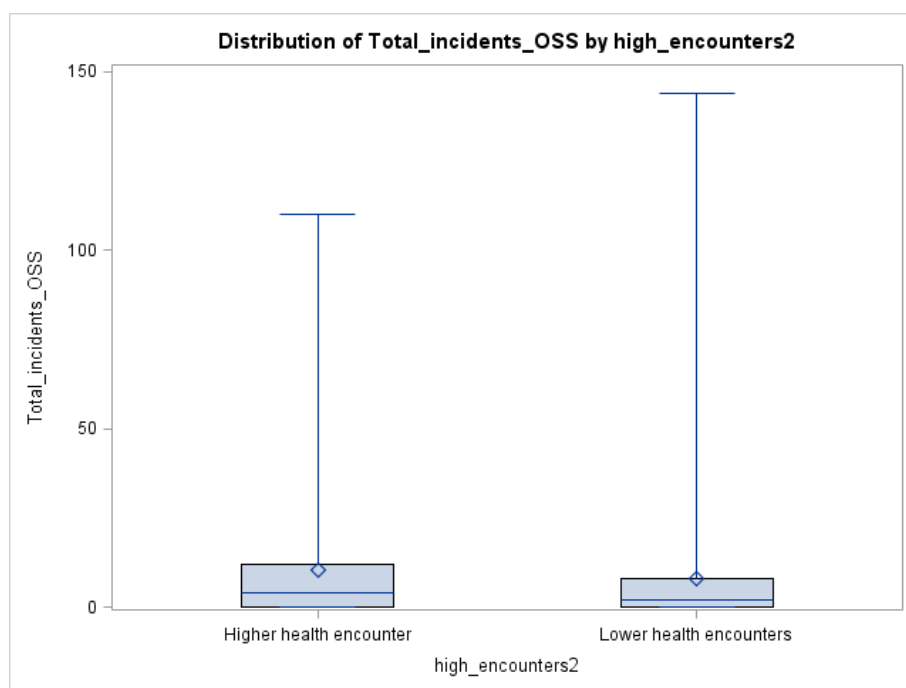


Figure 30. Distribution of total incidents that resulted in OSS days for middle school students by healthcare encounter group

CHAPTER 5: CONCLUSIONS

This research examined housing type as the basis of a typology of student homelessness. The effect of housing type on student's healthcare, academic, attendance, and behavioral outcomes was examined to initiate a better understanding of students living as homeless. While results from this research provides a good starting point for moving beyond a homogeneous understanding of homeless students, future research is needed to understand why these differences exist in order to better serve students experiencing homelessness.

It should be re-emphasized that this is exploratory research. As a result, these research findings should be interpreted with extreme caution and should only be considered preliminary. Future research is needed to move beyond associations and to definitive conclusions by including confounding variables within a causal comparative research design. In addition, outliers were identified in the data and these cases were kept in the analysis considering the exploratory nature of this research and since it was determined that these cases were legitimate data. While the decision to keep outliers in the analysis resulted in skewed distributions among housing type groups for some of the outcomes examined, they also are inspiration for future inquiry: what makes these students different or unique, and what can we learn from them?

Preliminary results from this exploratory research indicated that students living as literally homeless experienced worse behavior outcomes when compared to the other

housing type groups of homeless students and students living as literally homeless and students living in a motel experienced worse school attendance outcomes when compared to students living doubled up and living in shelters. For attendance outcomes, results suggested that students living as literally homeless and students living in a motel both experienced significantly more percentage of days absent from school when compared to the other housing type groups. For behavior outcomes, results indicated that students living as literally homeless experienced more ISS and OSS assignments when compared to the other housing type groups.

In addition to attendance and behavior outcomes, results indicated that students living as literally homeless experienced significantly more healthcare encounters when compared to the other housing type groups. For health outcomes, results suggested students living as literally homeless experienced significantly more overall healthcare encounters, ambulatory healthcare encounters, emergency healthcare encounters, inpatient healthcare encounters, and outpatient healthcare encounters when compared to each of the other three housing type groups. In terms of hospital admissions, results suggested that students living in a shelter experienced more mental health admissions when compared to the other housing type groups. However, this may simply be a reflection that students living in shelters may have better access to resources and mental health services, rather than they actually have more mental health issues. When student's primary health insurance type used for each healthcare encounter was examined, while not significant, results indicated that students living in a shelter used managed care more often than any of the other housing type groups. Students living in a motel experienced the least number of healthcare encounters, on average, when compared to the other

housing type categories. These results may indicate that students living in a motel experience significant barriers to accessing health care, rather than an indication of their actual health status.

Next, differences between housing type groups were explored by examining academic performance, attendance, and behavior outcomes by housing type, while differentiating between whether the student was identified as experiencing higher or lower healthcare encounters. The effect of housing type on percentage of days attended was significant where students living as literally homeless and who had higher healthcare encounters missed significantly more school compared to the other housing type groups. This result indicates that students who are literally homeless may be experiencing significant health problems that are causing them to miss school. For students with lower healthcare encounters, results indicated that for these students, students living as literally homeless were assigned more ISS days when compared to each of the other housing type categories. These same results were also indicated for both elementary and middle school students living as literally homeless.

Results suggested that overall, there were no substantial differences between students living doubled up or living in a shelter. However, there were substantial differences indicated for students living as literally homeless across all measures and students living in a motel across school attendance measures, suggesting that these students may need better access to services and treatment that is better aligned with their needs. To better understand the underlying reasons that contribute to the differences between these housing type groups of homeless students, future research is needed. The existing literature focuses on homeless families living in shelters, mainly because these

families are much easier to access and identify than homeless families living doubled up with family or friends, living in a shelter, or living as literally homeless. In addition, the current literature focuses on homeless students as a homogeneous group, while this research indicates that it may be more beneficial to subgroup homeless students by their housing experience as this may be a more useful approach in applying appropriate interventions for students experiencing homelessness.

The differences between housing type groups indicated through this study suggest that students in shelters and students who are living doubled up may fare better on most academic performance, behavior, attendance, and healthcare outcomes than do students who are living as literally homeless or students living in motels. The findings regarding students living in motels are counter intuitive to federal homeless funding priorities, related eligibility requirements in homeless service programs, and by homeless families that enter motels in order to avoid shelters. Unless a household can substantiate that they will be homeless in 14 days while living in a motel, they cannot qualify for federal homeless assistance and housing programs (National Healthcare for the Homeless Council, n.d.). While this research does not provide rationale for including doubled up households in homeless assistance programs, it may be that because of far-reaching academic implications, it could provide a rationale for extending housing-based programming to families living in motels.

Informal and Formal Social Support

One factor that may help explain the consistent counter intuitive findings in the study is the varying role of social support in the lives of homeless students and families. It may be that students living doubled up may have more informal social supports from

family and friends while students living in shelters may have more formal supports from formal social services when compared to students living as literally homeless and students living in motels, who may have fewer informal and formal supports (Bethany, L., Anderson, E. A., & Koblinsky, S. A., 1998).

For students living doubled up, they often end up living with family and friends after a traumatic event such as an eviction from their home, divorce, domestic violence, or incarceration of a parent (Dill, 2015). In addition, students whose housing is suddenly doubled up often face new and uncertain rules and routines, whereas students who live in shelters have specified rules and rigid routines. Hallett (2012) describes two types of doubled up households – merged or separate households. In merged households, roles are clearly defined and accountability for following the rules is delegated, compromises are worked out, and one or more adults may work to pay the rent or mortgage, oversee child care, prepare meals, or supervise homework. Additionally, merged households tend to support youth resilience because they are more orderly, routines are structured, and rules are defined (Hallett, 2012). While resources may be scarce among merged households, students are in an environment that supports their ability to control their actions and manage their behavior (Masten et al., 2012). In contrast, in separate households, members share space, but they do not collaborate to define household rules or expectations. This living situation among homeless families living doubled up with family or friends tends to be chaotic and is described as the “fend for yourself” atmosphere. For example, whoever gets to the refrigerator first, eats; and if there is a shortage of beds, the last person in sleeps on the floor (Hallett, 2012). Students who are living doubled up with family or friends and in a separate household type environment, may experience worse

academic, attendance, behavior, and health outcomes than students living doubled up and in a merged household type environment due to living in chaotic conditions and lack of positive informal social supports. However, considering the more positive outcomes indicated for students living doubled up with family or friends in this research, these preliminary results suggest that a higher percentage of these students may be living in a household type environment with positive informal social supports. While there is no doubt that students living doubled up are living in tough, crowded situations, informal social support may help mitigate that in the lives of these students. Future research is needed to examine the impact of these types of doubled up households to better understand their role and their contributions to the outcomes of students living doubled up.

For students living in shelters, it may be that these students have more formal supports such as counseling, medical and dental care, and preventive care. Also, these students may be living in a more structured environment when compared to the living conditions of students living in the other housing type groups. In addition, there are usually programs in place which offer services such as child care or child care referrals, case management, job training resources, and referrals. Generally, families are given a specific length of time that they can reside in the family shelter (from short-term to long-term) and goals are established for the family to support them toward eventual stable housing (Homelesssheltersite.org, n.d.). Results from this research suggested more positive outcomes for students living in shelters when compared to the other housing type groups suggesting that the students included in this research may be living in family shelter environments with access to targeted formal supports in alignment with their

needs. In addition, similar to students living doubled up and the possible impact of informal social supports for those students, for students living in shelters, formal support and programming may help mitigate that in the lives of these students. Future research should examine the impact of living in a shelter and access to various formal supports and programming to better understand how these contributing factors may influence outcomes of students living in shelters. In addition, to better inform the more promising preliminary results for students living doubled up and students living in shelters, future research should include a comparison of housed peers with these two housing type groups of homeless students to examine whether outcomes are more comparable for these students when compared to their housed peers.

Implications for Students Living as Literally Homeless and In Motels

Considering that students living in motels and living as literally homeless may be experiencing significantly worse outcomes when compared to students living doubled up and living in shelters, these preliminary results suggest that these two housing type groups of homeless students may potentially have less access to either form of social support. Further, while housing instability is undoubtedly a concern for homeless students living in each of the four housing type groups, it may be that the fear and anxiety of being unsheltered is much more prevalent among students living in a motel and certainly among students living as literally homeless. The inordinate stress of housing instability alone may have detrimental effects on both their physical and mental health. Future research should consider the contribution of the student's housing type on students' physical and mental health.

For students living as literally homeless, results suggested that students with higher healthcare encounters missed more school indicating that students living as literally homeless are possibly experiencing substantially more health problems when compared to the other housing type groups. For these students living as literally homeless, they may be at higher risk of exposure to extreme weather conditions, violence, hunger, malnourishment, and poor hygiene when compared to the other housing type groups. In addition, these students may be at a higher risk of depression, anxiety, and behavioral problems as a result of the extreme physical and emotional challenges of living as literally homeless. Considering the more extreme living conditions possibly experienced by this subgroup of homeless students, the preliminary results from this research support that more attention from service providers and better aligned resources should be considered for these students.

However, it may be that students living as literally homeless are likely to be the most difficult of the housing type groups of homeless students for service providers to identify. Unaccompanied students tend to be represented at a higher rate among unsheltered students when compared to the other housing type categories of homeless students. Unaccompanied students are youth not in the physical custody of a parent or guardian and are living on their own (U.S. Department of Education, 2004). Unaccompanied youth tend to be older children who have been kicked out of the home by their parents or who have run away from home (Hammer, Finkelhor, & Sedlak, 2002). In this research, on average, students living as literally homeless were older when compared to the other three housing type groups of homeless students. This indicates that this group may have a higher proportion of unaccompanied youth than the other housing

type groups. Unaccompanied youth face significant challenges as it is often more difficult for them to access services as they may not meet the criteria to stay in shelters, may not have family or friends willing or able to help them, may not be able to cover the cost of staying in a motel, or simply, may not know how to navigate the social service system. In addition, it is often difficult for service providers and schools to identify unaccompanied youth due to the student's fear of being reported to child welfare or law enforcement agencies or fear of being treated differently by school personnel or peers if "found out" to be homeless (Hammer, Finkelhor, & Sedlak, 2002).

For many families living in a motel, oftentimes, they end up there as a result of being evicted from their home and then unable to secure stable housing due to bad credit or not having enough money for a security deposit (Cordray & Pion, 1997). These families are literally just one step away from being unsheltered. Factor in the potential of lack of informal social supports and/or formal service supports, this could have detrimental effects on physical and mental health. Students living in motels often experience high levels of crowding which has been associated with social withdrawal, elevated levels of aggression, psychological distress, poor behavioral adjustment in school, and lower levels of social and cognitive competency (Kantrowitz & Evans, 2004). While students living in shelters and students who are living doubled up also experience crowding, students living in motels may be experiencing the effects of crowding with little to no social or formal support. Similar to students living as literally homeless, students living in motels may also be harder for service providers to identify.

Promoting Partnerships Among Schools, Healthcare, and Housing Agencies

These preliminary results suggest the need for organizations within the community that serve homeless students to align and partner with schools, healthcare and housing agencies to promote better outcomes for students experiencing homelessness – particularly, students living as literally homeless and students living in a motel. These two groups represented only 14.6 percent of the students in this research, yet results imply the need for more intensive services and/or better allocation of resources for these students. It is suggested that schools and districts partner with healthcare and housing agencies that support homeless students to develop programs and initiatives to reduce health barriers to learning – particularly for students living as literally homeless and living in a motel who may inadvertently be harder to identify or access than students living in shelters or living doubled up with family or friends.

It is well known that homeless students are affected by educational and health disparities (Alperstein, Rappaport, & Flanigan, 1988; Basch, Gracy, Johnson, & Fabian, 2015; Fantuzzo et al., 2012). This research indicates that students living as literally homeless and living in a motel may be experiencing significant negative education outcomes; and students living as literally homeless may be experiencing more healthcare encounters when compared to the other housing type groups. For these two groups in particular, housing instability may be a more significant factor in having an effect on their physical and mental health when compared with students living in a shelter or living doubled up with family or friends. Therefore, if housing is not addressed early for these students and their families – strategies implemented to improve academic or health outcomes by the school or healthcare sector may be less than effective. However, if

housing is addressed first, some of the more common healthcare, educational, and behavior barriers (e.g., higher healthcare encounters, more school absences, and more school suspensions) experienced by these students may not require intervention. For example, as students and their families are placed in stable housing, their exposure to extreme conditions living on the street or overcrowding in a motel room, may prevent incidents that would ultimately result in a healthcare encounter. Therefore, one of the most important and challenging aspects of improving outcomes for homeless students living as literally homeless or in a motel is for each sector – education, healthcare, and housing - to effectively work together to determine a common set of priorities, linking school, healthcare, and housing efforts together to help ensure the most educational, health, and housing benefit for this subgroup of students experiencing homelessness.

Moving From Silos to Collaborative Partnerships

While students experiencing homelessness have problems related to health, education, housing and social services that are all interrelated - our solutions, programs and services, policies, research, and funding streams are traditionally all in silos (Building Changes, 2011). However, there are recent efforts that attempt to overcome these silos. In Tacoma, Washington, a partnership between McCarver Elementary School and the housing authority was established and the McCarver Elementary School Special Housing Program was piloted in 2011. This program aims to tackle the problem of family mobility by slowing families from relocating and by easing the effects of such changes through supportive services. The program involves collaboration between public and private entities that do not typically work together – such as schools, healthcare providers, and social service groups. The program’s vision focuses on the idea that the

same dollars spent on housing assistance could simultaneously improve student outcomes and transform the local community (Johnson & Milner, 2015).

In the McCarver program pilot, 50 homeless families with children who attended the 28,000 student district's McCarver Elementary School agreed to keep their children enrolled in the high-poverty school for as long as they participated in the program, to become more involved in their children's education through parent-teacher conferences and volunteering at the school, and to work with caseworkers on a plan to improve the education and employment of adults in the household. In exchange, the families receive vouchers to help cover the cost of housing. In the first year of participation, families cover \$25 of their rental costs per month and the housing authority covers the remaining costs. Each year, the families' financial obligations grow gradually until they are able to pay the full rent amount. The program covers 80 percent of rent in the second year, 60 percent in the third year, 40 percent in the fourth year, and 20 percent in the fifth year. The McCarver program is in its fourth year (of its five year program allotment) and three independent evaluations of the program have shown promising results including a decrease in student mobility and an increase in school attendance. At the end of year five, final results will be assessed to determine plans for sustaining the program and possibly highlighting the program as a framework for other communities (Johnson & Milner, 2015).

The McCarver program is an example of how housing could be used as a platform to deliver services and supports to homeless families, beyond just the provision of providing safe and affordable places to live (Johnson & Milner, 2015). Short-term results from the Family Options Study (Gubits et al., 2015) discussed in Chapter 3 support the

view that for most families, homelessness is a housing affordability issue that may be resolved with permanent housing subsidies and without psychosocial services. However, this study is still underway and longer-term outcomes need to be examined to inform whether these effects continue to hold after housing assistance ends. Nevertheless, these preliminary results from the Family Options Study support the notion of addressing housing stability first. Once housing is stabilized, more intensive services may still be warranted for homeless students, particularly for those who are literally homeless or living in a motel. Using research, such as the Family Options Study and the McCarver program, as a starting point to inform strategies and interventions, partnerships between housing providers and other systems, like schools and healthcare centers, have real potential to drive policy that looks at homeless student needs holistically and comprehensively.

The literature documents that providing housing can significantly stabilize the lives of homeless families by decreasing the frequency of moves and rates of homelessness – both of which correlate with negative educational and health outcomes for students (Burt, 2001; Davis & Lane, 2012; Harburger & White, 2004). Affordable housing often leads to increased funding in child care, education, and healthcare – all of which correlate positively with educational outcomes (Johnson & Milner, 2015). Considering the positive effects of simply providing stable housing, as revealed in the preliminary results of the Family Options Study (Gubits et al., 2015), the effects of integrating service provider agencies, healthcare providers, and educational sectors and coordinating these efforts may have substantial influence on outcomes for homeless students – particularly the smaller proportion of homeless students living as literally

homeless and living in motels who may be experiencing higher levels of fear and anxiety around housing instability with little to no social or service provider supports when compared to students living doubled up or living in a shelter. Even more, by having a better understanding of the needs of this subpopulation of homeless students, service providers could align and apply interventions much more efficiently to ensure the best outcomes possible for students living as literally homeless and living in motels.

The key to progress is to identify a strategy, with the involvement of homeless families; local leaders; and educational, healthcare, and housing stakeholders in determining the best course of action to address the needs of this smaller group of homeless students and their families (Basch, Gracy, Johnson, & Fabian, 2015). Currently, federal programs are encouraging agencies to collaborate to address low-income communities' complex issues. For example, the Choice Neighborhoods program, encourages housing and service providers to better align housing and educational spending and outcomes (HUD.gov, 2016); and the Promise Neighborhoods program develops a range of "cradle-to-career" supports for families and children rooted in both scholastic programming and broader services (U.S. Department of Education, 2016). National organizations, such as the Council of Large Public Housing Authorities and Stewards of Affordable Housing for the Future, are looking more closely at how to use housing as a platform for other family supports that will promote positive educational and health outcomes for children (Johnson & Milner, 2015).

These collaborations have the best chances for success when there is political will and capital. For example, the McCarver program has attracted the interest of Washington State lawmakers and policymakers in which legislators have sponsored companion bills

that would encourage housing agency-school district partnerships around the state and use Washington's grant programs to incentivize them (Johnson & Milner, 2015).

Therefore, to determine ways to cultivate political will among elected officials and education, healthcare, and housing stakeholders to address these persistent health barriers to learning, to assess workforce preparedness to address health priorities, and to evaluate the effects of specific health and housing policies – particularly among students living as literally homeless and living in motels - are all important steps in understanding the links between education, health, and housing for this small subgroup of the homeless student population (Basch, Gracy, Johnson, & Fabian, 2015).

Usefulness of the McKinney-Vento Housing Type Indicator Typology

Much of the literature to date has focused on the homeless family, examined outcomes using the family unit or the head of household, and presented typologies to help better understand the similarities and the differences among homeless families. However, the typology research of homeless families is limited in its usefulness because typically, these typologies are developed using data from families living in shelters which represent a small proportion of families that are experiencing homelessness. Further, these typologies have, in general, been created using statistical methodologies to cluster families into derived groups typically based on time-aggregated and time-patterned approaches rather than examining typologies based on the more natural groupings of homelessness. This research focused specifically on the homeless student and tested a typology of student homelessness using the natural groupings of the student's housing type while homeless. While the empirical approach to developing typologies of homeless families deserves recognition and has helped us better understand homeless families, this

exploratory research offers a promising approach to help us better understand homeless students and their families by utilizing more natural groupings of homelessness to improve services and promote more positive outcomes for homeless students and their families.

Results from this research suggest that the McKinney-Vento housing type categories should be considered and that future research is necessary to determine other factors that explain differences within and between groups. This research suggests that the McKinney-Vento housing type indicator may be useful for targeted interventions (i.e., educational, healthcare, and housing) particularly to those students living as literally homeless and students living in a motel. In fact, a school may be the best tool of outreach to these families. Perhaps there is room to make better use of this typology in partnership with housing and healthcare providers, as well as educators, to ensure that especially those students who are living as literally homeless and students living in motels have access to the same formal supports that seem to help students living in shelters and living doubled up. The preliminary results from this research are promising in that differences were revealed among students living as literally homeless and students living in a motel, suggesting the need for organizing collaborative actions and initiatives among educational, healthcare, and housing stakeholders to promote the full educational and health benefits for this distinct subgroup of homeless students.

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